3rd International Congress on ADHD

Conference Review

Making Education Easy

May 26–29, 2011; Berlin, Germany

In this review:

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Welcome

to our review of the World Federation of ADHD's 3rd International Congress on ADHD – from Childhood to Adult Disease, held in Berlin, Germany during May 2011.

The review is a locally focussed summary of some of the latest and most exciting developments in attention-deficit hyperactivity disorder (ADHD) presented at the conference. It has been created to allow those unable to attend, but with a keen professional interest, to access a summary of some of the abstracts and presentations/lectures. Review and commentary has been carried out by Dr Craig Immelman, a Child & Adolescent and General Psychiatrist and Honorary Lecturer at the University of Auckland, who attended the conference in Berlin.

We hope you enjoy this review of the 3rd International Congress on ADHD.

Kind regards,

Dr Craig Immelman
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ADHD guidelines in Anglophone countries

Presenter: Thome J

Summary: Despite some similarities, this review of the CADDRA Canadian ADHD Practice Guidelines, the UK NICE guidelines, the Australian Guidelines on ADHD and the US AACAP/APA guidelines found several differences. Differences of note were guidance for different age groups and the relevance of pharmacological and nonpharmacological treatment strategies. The presenter concluded that: i) further convergence of the various guidelines based on both scientific and clinical evidence would be desirable; ii) continuous updates should integrate new research findings as they come to light; and iii) consideration needs to be given to national specifics (e.g. organisation of healthcare, service delivery).

Comment: The discrepancy between the AACAP/APA recommending medication first line (different to UK NICE) was one example. Even more interesting was the 'Meet the Experts' discussion with Professors Greenhill (AACAP) and Taylor (NICE) who noted the acceptance that ADHD even existed (prior to the NICE Guidelines there had been an announced opinion that ADHD did not exist as a valid diagnosis). Taylor also noted the greater mandate for the treatment of adults, noting that every treatment has a financial cost per quality-adjusted life-year (QALY), and if this exceeded a certain amount then the NHS would need to provide a service. I wondered what implications this might have for NZ. Professor Greenhill noted the first recommendation (screening for ADHD should be part of every patient's mental health assessment), and that as the US moved to national healthcare reform, the expectation was for better liaison between specialist and primary-care physicians with the prevalence of ADHD in youth approximately 5–7%.

Hot Topic: International ADHD treatment guidelines for childhood, adolescence and adulthood: HT-11-04

ADHD and substance abuse: challenges for harm minimisation

Author: Kaye S

Summary: This presentation discussed minimising harms associated with substance use disorders, which are likely to be increased in the setting of comorbid ADHD due to associated inattention, carelessness and impulsive behaviours. In addition, literacy, attention and information-processing limitations and noncompliance secondary to impulsivity in the presence of comorbid ADHD were identified as challenges for the implementation and effectiveness of public health strategies designed to reduce substance use disorder-associated harm.

Comment: It was refreshing to hear Sharlene Kaye's presentation from the University of New South Wales, because she could present a well-supported argument (despite it simply seeming to be common sense). Kaye highlighted the association between untreated ADHD and a substance use disorder, and she pleaded for ADHD to be treated in this population. I was left wondering about the logistics of implementation, even if the premise were to become widely accepted (from both ends: sceptical clinicians and drug-seeking clients).

Hot Topic: International collaboration on ADHD and substance abuse (ICASA, www.adhdandsubstanceabuse.org): HT-06-04

Independent commentary by Dr Craig Immelman.

Dr Craig Immelman is a Child & Adolescent and General Psychiatrist, and General Psychiatrist in private practice in Auckland, and an Honorary Lecturer at the Department of Psychological Medicine at the University of Auckland. He is a graduate of the University of Witwatersrand, Johannesburg, completed his postgraduate training in psychiatry in Auckland in 2001 and is a Fellow of the Royal Australian & New Zealand College of Psychiatry. Dr Immelman has broad clinical interests, is a Fellow of the Faculty of Child & Adolescent Psychiatry as well as a Member of the Faculty of Forensic Psychiatry (RANZCP). His special interests include foetal alcohol syndrome, eating disorders and youth justice. He also consults to a number of District Health Boards. He provides expert opinion to Courts, and holds the designation of Specialist Assessor relating to intellectual disability.

ADHD and adolescents: clinical approaches in the comprehensive treatment of adolescents with ADHD

Authors: Hill P

Summary: This presentation on the treatment of ADHD in adolescents began by pointing out that managing this patient group is not helped by the traditional idea of adolescence as a developmental phase. The implications of neurophysiological changes (e.g. brain cortex/white matter, balance of dopamine circuits) and social changes (e.g. increasing importance of peer group standards and involvement) that adolescents undergo during puberty were discussed. The following improvements associated with the slowing of the development of grey matter that occurs during adolescence were highlighted: 1) inhibitory control; ii) processing speed; iii) working memory; and iv) decision making. It was also noted that there is a general correlation between executive function and prefrontal cortex development on functional MRI. Resulting imbalances lead to a 'reward deficiency syndrome', prompting adolescents to seek out environmental novelty and risk, sensation and drug thrills. Reduced pleasure obtained from apparently positive experiences may also result in a lower mood. The following changes in the patient-physician relationship also tend to occur: i) shift from parental referral to patient acceptance basis; ii) balance of the focus of the complaint (parent/teacher shift towards subjective); iii) more open discussion of adverse effects; iv) shift in authority/responsibility within families; and v) therapy discontinuation, then resumption. The following issues regarding medication use were highlighted: i) external pressures from marketing authorisation ('licensing') regulations; ii) potential shifting between regular and pulsed or as needed treatment regimens; iii) patients' abilities to titrate dosages against situational demands; iv) providing advice about concomitant use with alcohol, cannabis, etc; and v) the patients' abilities to manage controlled medications.

Comment: Professor Hill began by addressing three 'myths': i) teenagers are governed by raging hormones (there is very little evidence supporting this); ii) identity complexes are common in ordinary adolescents; and iii) teenagers need to rebel against parental values and distance themselves from the family. The practical issues faced by NZ mental health clinicians seem similar to those Professor Hill encountered, including acknowledgement that treatment strategies that might have worked well for a 10 year old may not work as well for a 15 year old (the extended day for teenagers, erratic sleep patterns and 'latent' ADHD being thrown more clearly into focus by the need for increasingly analytic schoolwork). Professor Hill also discussed the difficulties in preparing an adolescent and family for transitioning to adult services. He ended by setting out a number of the ethical issues clinicians face, including the autonomous decision making of adolescents, the need for confidentiality and the misuse and diversion of medications, which some have referred to as 'cosmetic neurology' (using stimulant medication for the purposes of enhancing academic performance). It was refreshing to hear another clinician wrestling with all-too-familiar issues, none of which have easy answers.

Satellite Symposium: ADHD and adolescents: SA-01-03

Environmental influences in ADHD

Author: Buitelaar J

Summary: Unique or shared environmental factors, including pregnancy and delivery complications, low birthweight, premature birth, exposure to toxins (both *in utero* and during childhood) and psychosocial adversity, account for around 30% of variance in ADHD traits. This systematic review found that methodological limitations are often present in literature reporting effects of environmental factors on ADHD, with insufficient or only suggestive evidence linking such factors to the aetiology of ADHD in many cases. Also, gene-environment correlations and interactions complicate many studies and potentially lead to underestimation of effect sizes associated with environmental factors. The presenter concluded that study into environmental influences in ADHD aetiology has not kept up with research into genetic influences.

Comment: Using the Bradford Hill criteria to assess causality in 496 papers, Buitelaar noted that none of the risk factors met criteria for grade A ('proof'), despite twin studies clearly pointing towards the importance of environmental factors. Premature birth (odds ratio 2.5), maternal smoking and low birthweight (odds ratio >2) were grades B and C. Maternal alcohol and other drug use and severe head injury were grades C and D, whereas mild or moderate head injury was grade E. Although hereditability is high (76%), this in itself tends to hide the importance of the gene-environment interaction.

Plenary Session: Update on diagnosis, classification and aetiology of ADHD in childhood, adolescence and adulthood: PS-01-04

Genetic contribution to the development of ADHD: current state of the art

Author: Franke B

Summary: The current knowledge on the role of genetics in ADHD was presented. To date, a small number of genes have been identified to have a role in ADHD. Bioinformatics have demonstrated that neurite outgrowth is important in the aetiology of ADHD. Early study results suggest that different alleles of a gene contribute to ADHD in adults and children, and that there are genes that predispose to childhood ADHD that may not also predispose to adulthood ADHD. Recent work by the author's group has revealed that structural and functional neuroimaging is useful for resolving the biological pathways involved in ADHD from genes to disease, and that structural neuroimaging provides useful intermediate phenotypes for identifying novel genes that could predispose to ADHD.

Comment: Dr Franke discussed the novel approaches using genome-wide association studies. Although the findings seemed to be somewhat tantalising, there were no clear answers. Some of the difficulties included the need for a p value $<5 \times 10^{-8}$ for significance to be declared (in order to avoid the risk of false positives). Dr Franke did make three conclusions: i) ADHD rare genetic variants were more common than expected; ii) that the findings of her group implicated the same genes in different psychiatric disorders; and iii) that an effective strategy in identifying genes was the genome-wide association study and that more was required. I was left wondering about phenotypic robustness, and whether the lack of clear genotypic answers related to heterogeneous samples.

Plenary Session: Update on neurobiology of ADHD: PS-02-01

Imaging brain structure and function in ADHD

Author: Müller U

Summary: This review of literature on neuroimaging research combined with research from a Cambridge group identified converging structural and functional neuroimaging evidence that supports the model of *"neurodevelopmental deficits in fronto-striatal networks modulated by dopamine (and noradrenaline)"*. However, the author concluded that there is a need for the current speculative interpretations of neuroimaging research findings to be replaced by consolidated evidence.

Comment: Despite considerable intellectual rigor and effort, Dr Müller was blunt that "the message here is, well, we don't really know", which reiterates the view of Del Campo that fronto-striatocerebellar circuits having dopamine and noradrenaline (norepinephrine) playing important roles in high level executive functions being often reported as impaired in ADHD; the precise prefrontal cortical and subcortical mechanisms by which stimulant medications (such as methylphenidate) exert their therapeutic effects "remains to be fully specified". Overall, Dr Müller asked for more neuroimaging ADHD studies to be replicated; despite some evidence supporting the dopamine-deficit hypothesis of ADHD, this was not consistent. Similar to the presentation on genetics, I wondered about the clinical homogeneity of the ADHD group, and how much this could explain the variability in neuroimaging.

Plenary Session: Update on neurobiology of ADHD: PS-02-02

Optimizing individually tailored pharmacotherapy in children and adolescents

Author: Coghill D

Summary: This abstract reported evidence from recent systematic reviews on the pharmacological treatment of ADHD suggesting that remission is achievable for many patients. However, as the author points out, many clinicians often feel satisfied if their patients achieve some remission, rather than optimising treatment. Data from studies investigating stimulants suggest that it is difficult to predict: i) responders; ii) the optimal dosage for responders to achieve the best outcome; and iii) patients who will experience drug-related adverse effects. The MTA study findings suggest a number of approaches that can be used to facilitate optimal treatment. While accurate titration of the medication dosage during the first stage of treatment is important, maintaining focus on optimal outcomes is just as important during ongoing treatment.

Comment: Coghill's main message was: "keep pushing – you can do better for your patients." Coghill was also clear, based on his experiences in his Dundee based unit, that patients and their families are often 'too kind' in giving feedback to mental health professionals about their progress, which can lead to minimisation of difficulties. Improvements in outcome could be achieved by identifying the problems patients were having using both clinical judgment as well as psychometric measures (SKAMP, SLAP4, CGAS). Coghill preferred monotherapy, although he noted the emerging data on clonidine in conjunction with methylphenidate in some cases. He summarised his talk at the outset into six points: i) gather enough information to make an accurate diagnosis using both the ICD and DSM frameworks; ii) implement evidence-based algorithms for choosing the right first treatment; iii) implement effective titration protocols; iv) understand the pharmacokinetics and pharmacodynamics of the different preparations available to you and their individual strengths and weaknesses; v) continue to use effective monitoring protocols during the continuing care phase; and vi) implement good basic pharmacological practices throughout treatment – sound advice.

Plenary Session: Update on treatment of ADHD in childhood, adolescents and adults: PS-04-01

What do we know about psychotherapeutic treatment in adult ADHD?

Author: Philipsen A

Summary: This presentation was an overview of evaluated individual and group psychotherapy programmes for patients with adult ADHD. The targets of psychotherapeutic interventions include coping with core symptoms, associated problems, comorbidities and the likely consequences such as low self-esteem and interpersonal problems. Cognitive behavioural and/or dialectical behavioural approaches, which have formed the bases for previous trials on psychotherapy in ADHD, have found significant effects and benefits can be achieved, including improvements in both ADHD symptoms and associated symptoms (e.g. depression, anxiety). Preliminary evidence suggests that combining psychotherapy with pharmacotherapy improves outcomes. It is also often regarded that group settings, where patients can draw on support from other patients, is very helpful.

Comment: The psychotherapy of ADHD has only recently been studied, with the evidence to date demonstrating its efficacy. Philipsen's group in Freiburg has developed a tailored programme for adult ADHD in a group setting with the overarching goal being "the ability to control ADHD rather than to be controlled". In the group, discussion would focus on psychoeducation (neurobiological model, neuroplasticity), mindfulness, 'chaos and control' (related to time management and organisation), analysis of dysfunctional behaviour and impulse control, emotional regulation, depression (including co-occurring disorders and medication), stress management and the risk of substance dependence. Her groups comprised 6–9 participants with two therapists (using DBT-type approaches) and included homework and written materials with the additional counselling of family members or partners (minimum of 13 two-hour sessions in total). Overall, her approach had me think of the integrated CBT/antidepressant treatments for depression. Cost efficiency and feasibility in a NZ setting had me worried, but these are early days.

Plenary Session: Update on treatment of ADHD in childhood, adolescents and adults: PS-04-03

Debate: the psychostimulant is not dangerous for the patients

Proponent: Greenhill L

Opponent: Lange KW

Summary: Much controversy exists regarding the safety of methylphenidate, due to a number of harmful effects, ranging from mild to life threatening, that have been reported/observed; cases of sudden death have been reported in paediatric patients, particularly in the presence of cardiac disorders. In addition, nonmedical/illicit use of methylphenidate is increasing. This debate focussed on the consequences of methylphenidate therapy, including addiction, adverse reactions and medical complications.

Comment: Professor Greenhill proposed the motion, stating that stimulant medication has not been proven to cause sudden death in children, adolescents or adults, even in most subjects with heart defects ("astronomically low" observing NNT and NNH, probably no different from patients that were not taking any stimulant medication). Despite a slight increase in emergency department visits for cardiac symptoms, life-threatening events were also extremely rare. Greenhill was clear in his data that early treatment of ADHD with stimulant medication does not lead to widespread misuse and diversion. Opposing the motion, Professor Lange focused on the effects of growth in children, acknowledging the high rates of variability. Animal studies have shown changes in the developing brain if a stimulant medication is given early, but he was unclear about the significance in humans. Professor Lange noted that the cardiac reactions included an increase of heart rate by about 5 beats/min, and an increase in blood pressure by about 2–7mm Hg, with stimulant medication being sympathomimetic; the cumulative effects of these small changes (perhaps intimal plaque formation) were unclear. No overall winner was declared; I did not find Professor Lange's arguments compelling.

Pro-Con Debate: PCD-01-01/2

ADHD and antisocial behaviour

Author: Young S

Summary: This presentation discussed the treatment needs of criminal offenders with ADHD, and also presented data regarding the efficacy of the revised UK R&R2 (Reasoning & Rehabilitation) offending behaviour programme for adults and youths with ADHD. The authors reported rates of 43% and 24% for ADHD (childhood history) among youths and male adult prisoners, respectively. Such prisoners who exhibit persistent symptoms (14%) offend at a significantly younger age and have a higher recidivism rate. The most important predictor of violent offending is the presence of ADHD, and these individuals account for eight times more critical incidents than other prisoners. Furthermore, such incidents have been linked to patients with personality disorders who screen positive for ADHD and who are detained under the UK Mental Health Act. The authors commented that the most likely factor associated with an increased risk of these critical incidents is ADHD-associated mood instability, and appropriate targeted treatment could therefore help curb such behavioural problems.

Comment: Susan Young stated that she worked at Broadmore Hospital in a high-security facility, and made a strong case for the identification of treatment of inmates with ADHD. It did not appear that she had any illusions about the challenges that this posed. Interestingly, despite the abuse potential for both, methadone maintenance appeared well accepted within prisons, which was not the case for methylphenidate. Young sensibly stressed the need for careful evaluation and screening, and the risk of assisting criminals with ADHD, when treated, to be 'better criminals' (more attentive, less impulsive, but nonetheless antisocial). It will be interesting to follow this work through, and to see how other jurisdictions fare. To me, Young's logic was compelling.

Plenary Session: Course, differential diagnosis and comorbidity of ADHD: PS-03-04

ADHD and autism

Author: Freitag C

Summary: New data and areas of clinical importance and research needs associated with ADHD in the presence of autism spectrum disorders (ASDs) were discussed in this presentation. The presenter found there are few studies that have compared both childhood-onset disorders at the phenotypic, neuropsychological, neurobiological and genetic levels. Studies that have been conducted have reported neuropsychological measures. It was concluded that further study needs to be conducted into the clinical overlap and differential diagnosis of these two disorders.

Comment: Dr Freitag began by observing that the DSM4-TR diagnosis of a pervasive developmental disorder (such as autism) precludes the diagnosis of ADHD (in the ensuing discussion the consensus was that this will change in DSM5). Nonetheless, he had identified 951 publications in a PubMed search of "ADHD and autism". To date, there are also no epidemiological studies on ASDs and ADHD. Freitag went on to present four models of comorbidity: i) by chance; ii) that there were three or more independent disorders (i.e. ASD, ADHD, ADHD plus ASD); iii) that the presence of one disorder is a risk factor for an occurrence of the other disorder; and iv) that the disorders are overlapping with correlated risk factors. Freitag concluded with only one firm conclusion: ADHD and ASDs co-occur more frequently than by chance, calling for further study.

Plenary Session: Course, differential diagnosis and comorbidity of ADHD: PS-03-02

ADHD and deficient emotional regulation

Author: Faraone S

Summary: This abstract presented the findings of two family studies, one in youth and the other in adults, that explored the contribution of ADHD to deficient emotional self-regulation (DESR). The youth study involved 197 children with ADHD, 224 without ADHD and 128 siblings, while the adult study included 206 adults with ADHD or ADHD NOS (late onset) and 123 without ADHD. In the youth study, DESR was defined as a score of >180 and <210 on the Anxiety/Depression, Aggression and Attention scales of the Child Behaviour Checklist, with items from the Barkley's Current Behavior Scale assessed in the adult study. Both studies found similar results, with DESR predicting increased impairment and psychiatric comorbidity, and the relationship between ADHD and DESR independent of psychiatric comorbidity. DESR was found to be independent of neuropsychological dysfunction. In addition, familial transmission seen in DESR suggests that it may be a familial ADHD subtype, rather than familial expression of other axis I DSM-IV disorders or nonfamilial environmental factors.

Comment: Stephen Faraone's presentation of two independent studies, which appear robust and which supported the identification of DESR as a familially transmitted emotional component of ADHD, was interesting at a 'grass roots' level, because it rang true with many of the patients I have seen clinically. Faraone went further, acknowledging the ongoing controversy about ADHD, bipolar disorder and mood dysregulation. He also made the converse point that in patients with DESR, a screen for ADHD should be undertaken.

Plenary Session: Course, differential diagnosis and comorbidity of ADHD: PS-03-03

Pre- and perinatal risk factors in adult attention deficit hyperactivity disorder (ADHD)

Authors: Halmøy A et al

Summary: This population-based study of Norwegian adults diagnosed with ADHD between 1997 and 2005 (cases; n=2323) compared with the remaining adult population of Norway (controls; n=1170,073) found that cases were 1.3 and 5.0 times more likely to have been born at <37 and <28 weeks' gestation, respectively, and 1.5 and 2.1 times more likely to have had birthweights <2500g and <1500g, respectively. The risks of persisting ADHD were 2.8 and 1.5 times greater when Apgar scores were <4 and <7, respectively. Adults with ADHD were also more likely to have an oral cleft (relative risk 2.8 [95% CI 1.6, 4.9]) and be born to mothers with epilepsy (1.7 [1.1, 2.7]).

Comment: Halmøy et al should be congratulated on the larger study of pregnancy and birth complications in ADHD so far, as well as the first population-based study of pregnancy and birth complication in adults with a clinical diagnosis of ADHD. The significance of this study is that low birthweight, preterm birth and low Apgar scores increase the risk of ADHD persisting for up to 40 years after birth. This is in the context of an increasing proportion of newborns currently surviving unfavourable pregnancies and birth conditions, which clearly have consequences and implications for the individuals and society. The need for careful diagnostic assessment in such cases appears self-evident, and this will further shape my own practice.

Poster: Epidemiology: adults II: P-29-04

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