

Adolescent ADHD

Attention deficit and hyperactivity disorder

AYPH Research Summary No 12, December 2012

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Welcome

ADHD is normally diagnosed in childhood, often during the primary school years. Much less attention is paid to what happens next, as the children transfer into secondary school, and then as people affected by ADHD transition from adolescent services into adult provision. This Research Update is about what happens when young people with ADHD move through their second decade.

What we have done in our series of Research Updates is to pull together some themes emerging from the literature, presenting the main messages and a selection of new research work on each topic. Topics covered by earlier updates in this series include health implications of new technologies, adolescent sleep, long-term conditions, accidents and injuries, health inequalities, disability, physical activity, alcohol and substance use, teenage pregnancy and sexual health, and mental health and emotional wellbeing. You can obtain an extended version of this paper, along with copies of all our past and future Research Updates by joining AYPH (www.ayph.org.uk).

Symptoms of ADHD in adolescence

The key symptoms of ADHD are inattention, impulsiveness and hyperactivity. In adolescence, increased risky behaviour (early substance use; risky sexual behaviour) may be seen, accompanied by insomnia or feelings of worthlessness¹. ADHD is often accompanied by other problems as well. For example, there is strong overlap with a range of psychiatric disorders in adolescence, including behaviour disorders, anxiety and depression and eating disorders.²

How many young people are affected by ADHD?

The main criteria for diagnosing ADHD are the checklists of key symptoms set out in two manuals; DSM-IV (from the

American Psychiatric Association)³ and ICD-10 (from the World Health Organisation)⁴, although in fact ICD-10 classifies it as 'hyperkinetic disorder' rather than ADHD.⁵

Based on studies using these criteria, estimates for rates of ADHD in early childhood (up to age 10) usually hover at around three to six per cent.^{6 7 8} Around two thirds of children with ADHD continue to show symptoms in their teens.⁹ Given the estimates for primary pupils, we can thus assume that ADHD affects around two to four per cent of teenagers in the UK. Research consistently shows a higher rate in boys than girls.

Features of ADHD in adolescence

Inattention, impulsiveness, inner restlessness, academic difficulties, problems with authority, increased risky behaviour, driving accidents, aggression, worthlessness.

(from: Vierhile et al, 2009)

Impact in adolescence

Poor concentration is a real challenge for young people with ADHD during the build up to school exams at age 16 and 18. As well as having an effect on their attainment, it can contribute to irritability and rebelliousness and difficulties with people in authority. Difficulties focusing, organising their time, and problems with long-term planning all contribute to the challenges. ADHD in the teen years also affects peer relationships, self-esteem, and group activities such as sports.¹⁰ A disproportionate number of young people with ADHD are involved in the youth justice system.¹¹ In adolescence, the stakes are higher and the consequences of impulsiveness may be more serious than in younger children¹². A clear example relates to teen driving. Young people with ADHD are more likely to be involved in road traffic accidents.¹³

Effective support

There are clear health risks associated with ADHD, particularly in relation to substance use, risky health behaviour, accidents, sleep difficulties and mental health problems. Young people need to learn how to minimise the potentially damaging effects of behaviour. They will need help managing their impulsiveness; teachers, health service providers and others will all play a role. Understanding the challenges and the underlying causes of the young person's behaviours are an important first step, and anticipating a lack of confidence and low self-esteem will also help. Most research suggests that a combination of behavioural interventions and medication work best for more serious cases¹⁴, but there is far less information in the literature on how to manage the behaviour of a teenager with ADHD than a younger child.

Challenges of transition

The primary challenge with the transition from child to adult services for ADHD is that adult ADHD has received very little recognition until extremely recently. There are also very few adult services into which a transition can be made. With the publication of the NICE guidelines in 2009 the situation improved, in that the importance of provision for adults was emphasised. However, much needs to be done to improve support for young adults, at a time when ADHD can hinder decision-making about educational and employment pathways, and interfere with moving to independent living. The importance of primary care staff in providing continuity of care has been emphasised, with implications for relevant training and adequate support.¹⁵

Recent reports

ADHD Voices study final report

Singh I (2012), published by Kings College London. <http://www.adhdvoices.com/adhdreport/> Interviews with over 150 children from the UK and USA investigated young peoples' perspectives on having ADHD and on controversies over stimulant medication for ADHD. Generally the respondents were more positive about medication than expected, claiming that drugs helped them to stop and think before responding, and gave them freedom to be themselves. (See also commentary in the British Medical Journal at <http://www.bmj.com/content/345/bmj.e6947>).

Useful reviews

Practitioner Review: What have we learnt about the causes of ADHD?

Thapar A, Cooper M, Eyre O, and Langley K (2012) *Journal of Child Psychology and Psychiatry*.

Downloadable from <http://onlinelibrary.wiley.com/doi/10.1111/j.1469-7610.2012.02611.x/pdf>.

Confirms that no single risk factors explains ADHD, and that both inherited and non-inherited factors are implicated, working in combination with each other. Evidence is not strong in relation to pre- and perinatal problems, and is inconsistent in relation to diet, but is stronger for the effect of some particular environmental toxins and extreme forms of early deprivation. There are important overlaps with other problems such as autism. Practitioners need to take note of the familial and heritable nature of ADHD, as parents themselves might be affected and this could impact on parenting.

The challenge of ADHD and Youth Offending

Harpin V and Young S (2012) *Cutting Edge Psychiatry in Practice*, 1, 138-143. Downloadable from

<http://www.cepip.org/content/challenge-adhd-and-youth-offending>.

This paper, by a consultant paediatrician at Sheffield Children's NHS Foundation Trust and a senior lecturer in forensic clinical psychology at Kings College London, presents a useful overview of the links between ADHD and committing crime. Studies reviewed suggest that around 45% of young people in the youth justice system have symptoms of ADHD, and may require more complex and comprehensive interventions than other young people.

Avoiding the 'twilight zone': Recommendations for the transition of services from adolescence to adulthood for young people with ADHD

Young S, Murphy C and Coghill D (2011) *BMC Psychiatry*, 11: 174 (on line open access at

<http://www.biomedcentral.com/1471-244X/11/174>)

Reviewing the difficulties of young people with ADHD who are transitioning from child to adult services, the authors note the lack of adult provision and identify a number of barriers to successful transition. They make recommendations for improvements, extending and developing the NICE guidelines on ADHD (see Policy and guidelines). As they note, since the NICE guidelines were introduced more adult mental health services are expressing an interest in adult ADHD but service provision remains very patchy.

Driving impairments in teens and adults with attention-deficit/hyperactivity disorder.

Barkley R (2004) *Psychiatr Clin North Am*, 27, 233-60

ADHD can lead to more distraction, less inhibition and more variable reaction times in drivers. The result is more motor vehicle crashes, repeated crashes, and more serious crashes. Use of stimulant medication decreases the risks. Although this review is a little dated, it is included because it draws together an important set of work. Innovations in simulated driving experiments (with more sophisticated computers) are likely to lead to better understanding of what is going on.

Recent research

Special Virtual Issue of the practitioner journal Child and Adolescent Mental Health, (CAMH) published on-line in October 2012, draws together a number of papers published in CAMH over recent years focusing on ADHD, including teachers' recognition of children with ADHD, motor problems and social competence.

Exercise improves behavioural, neurocognitive and scholastic performance in children with attention deficit/hyperactivity disorder.

Pontifex M, Saliba B, Raine L, Picchietti D and Hillman C (2012) *Journal of Pediatrics*, e-publication ahead of print at the time of writing.

Forty children aged eight to ten, of whom half had ADHD, undertook 20 minutes of exercise on a treadmill versus quiet reading, followed by maths and English tests. Both groups benefited from exercise, but the findings may be particularly important given that children with ADHD may do less organised and structured physical activity at school than other groups.

http://education.msu.edu/kin/hbcl/articles/Pontifex_2012_ExerciseImprovesBehavioralNeurocognitive.pdf

ADHD knowledge, perceptions and information sources: Perspectives from a community sample of adolescents and their parents

Bussing R, Zima B, Mason D et al (2012) *Journal of Adolescent Health*, e-publication ahead of print at the time of writing.

A community sample of 374 young people aged 15 years explored misperceptions among parents and adolescents; particularly concerning the role of sugar in causing ADHD and overuse of medication. Parents used a range of information sources, but adolescents relied on social networks and teachers/school. The internet and family doctors were important to both groups.

Prospective follow-up of girls with attention-deficit/hyperactivity disorder into early adulthood: Continuing impairment includes elevated risk for suicide attempts and self-injury.

Hinshaw S, Owens E, Zalecki C et al (2012) *Journal of Consulting and Clinical Psychology*, e-publication ahead of print at the time of writing

ADHD is less common in young women, and the implications may be different for them. In this study, young women diagnosed with ADHD as girls were three to four times more likely to attempt suicide, with 22 per cent reporting at least one suicide attempt by their late teens/early 20s. They were two to three times more likely to report injuring themselves, with 51 per cent reporting incidences of scratching, cutting, burning or hitting themselves by follow-up.

Brief report: The impact of Attention Deficit Hyperactivity Disorder (ADHD) symptoms on academic performance in an adolescent community sample.

Birchwood J and Daley D (2012), *Journal of Adolescence*, 35, 225-231

There is less evidence on how ADHD affects academic performance in adolescence, compared with earlier childhood. In this UK based study, participants were aged 15 and 16 (year 11). ADHD symptoms are an important predictor of academic performance suggesting that children moving into secondary school with a diagnosis of ADHD are likely to require particular support if they are going to fulfil their potential.

<http://www.ncbi.nlm.nih.gov/pubmed/20880572>

Childhood ADHD is strongly associated with a broad range of psychiatric disorders during adolescence: a population-based birth cohort study

Yoshimasu K, Barbaresi W, Colligan R et al (2012) *Journal of Child Psychology and Psychiatry*, 53, 1036-1043

Followed up 379 ADHD cases and 758 comparisons to age 19, and found that ADHD was associated with an increased risk of mood disorders, anxiety disorders, conduct/oppositional disorders, adjustment disorders, tick disorders, eating disorders, personality disorders and substance-use disorders, with significantly elevated odds ratios in the region of three to nine for each of these outcomes. The authors conclude that besides treating ADHD, health services should be alert to these other potential difficulties and provide treatment when necessary.

Association between attention-deficit/hyperactivity disorder in adolescence and substance use disorders (SUDs) in adulthood

Brook D, Brook J, Zhang C and Koppel J (2010). *Arch Pediatr. Adolesc. Med.*, 164, 930

A longitudinal study spanning the ages 14 to 37 years, based on an American community sample from 1975. There was an increased odds ratio of substance use disorder of between 1.9 and 3.5 among those with ADHD, but the main link was with the serious behaviour problems ('conduct disorder') that can accompany ADHD. The authors suggest that paediatricians should '...focus on adolescent ADHD when it progresses to conduct disorder because conduct disorder is major predictors of SUDs in adulthood' (p930).

Sleep problems and disorders among adolescents with persistent and subthreshold attention-deficit/hyperactivity disorders.

Shur-Fen Gau S, Chiang H (2009) *Sleep*, <http://www.journalsleep.org/ViewAbstract.aspx?pid=27462> 32, 671-679

Adolescents with ADHD are likely to have current sleep problems and sleep disorders such as insomnia, sleep terrors, nightmares and snoring. Of a sample of 281 patients who had been diagnosed with ADHD, 17% had primary insomnia compared with seven per cent of controls. The sleep problems may be caused by internet addiction, the hyperactivity elements of their diagnosis, use of stimulants and co-morbid psychiatric disorders such as anxiety.

Policy and guidelines

National Institute for Health and Clinical Excellence (NICE) (2009) *Attention Deficit Hyperactivity Disorder: Diagnosis and management of ADHD in children, young people and adults.* National Clinical Practice Guideline No.72. Published by the British Psychological Society and the Royal College of Psychiatrists. Various related documents downloadable from <http://guidance.nice.org.uk/CG72>, with the full (300+ pages) report available at <http://www.nice.org.uk/nicemedia/pdf/ADHDFullGuideline.pdf>

British Association for Psychopharmacology, 'Evidence-based guidelines for management of attention-deficit hyperactivity disorder in adolescents in transition to adult services and in adults: recommendations from the British Association for Pharmacology'. Downloadable from

http://www.bap.org.uk/pdfs/ADHD_Guidelines.pdf. Particularly draws attention to local pharmacy regulations that can lead to difficulties in continuing with prescriptions after transition to adult services.

Conclusion

ADHD is critically important in adolescence, and research tells us that most young people who were diagnosed as children do not grow out of it at this stage. However services lag behind those for children and more needs to be done to support adolescents making the transition into adulthood. Care also needs to be taken to note the particular risks associated with the combination of ADHD symptoms with normal adolescent risk taking and experimentation.

Examples of useful resources (extended list in our full research update)

- 'ADHD and You', <http://www.adhdandyou.co.uk/HCP/default.aspx>
- ADHD Foundation, www.adhdfoundation.org.uk
- ADHD Training and Support for Clinicians <http://www.adhdtraining.co.uk/about.php>
- ADHD Voices Project <http://www.adhdvoices.com/>,
- UK Adult ADHD Network, <http://www.ukaan.org/>

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- ⁹ Jadad A, Booker, Gauld M et al () The treatment of attention-deficit/hyperactivity disorder. An annotated bibliography and critical appraisal of published systematic reviews and metaanalyses. *Can J Psychiatry*, 44, 1025-1035
- ¹⁰ Healthychildren.org (from the American Academy of Pediatrics) (2012) *ADHD in adolescence*. Downloaded from <http://www.healthychildren.org/English/health-issues/conditions/adhd/pages/ADHD-in-Adolescence.aspx?nfstatus=401&nftoken=00000000-0000-0000-0000-000000000000&nfstatusdescription=ERROR%3a+No+local+token> 27 November 2012
- ¹¹ Harpin V and Young S (2012) The challenge of ADHD and youth offending. *Cutting Edge Psychiatry in Practice*, 1, 138-143. Downloadable from <http://www.cepip.org/content/challenge-adhd-and-youth-offending>
- ¹² Healthychildren.org (from the American Academy of Pediatrics) (2012) *ADHD in adolescence*. Cited above
- ¹³ Barkley R (2004) Driving impairments in teens adults with attention-deficit/hyperactivity disorder. *Psychiatr Clin North Am*. 27, 233-260
- ¹⁴ NICE (2009) *ADHD Disorder: Diagnosis & management of ADHD in children, young people and adults*. London: NICE

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