Consequences of untreated ADHD

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Pathway to adulthood

- **Continuation of core symptoms**
  - in partial remission
  - ‘graduates’ with a ‘hangover’
  - lability of mood (anger, depression, anxiety)

- **Negative feedback**
  - educational and occupational problems
  - antisocial and criminal behaviour
  - interpersonal relationship problems

- **Impact on personal resources**
  - personality problems
  - learned helplessness
  - internalised failure
  - low self-esteem and poor self-efficacy
# Academic Outcomes

<table>
<thead>
<tr>
<th></th>
<th>ADHD</th>
<th>Non-ADHD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reading disability: boys</td>
<td>51%</td>
<td>15%</td>
</tr>
<tr>
<td>Reading disability: girls</td>
<td>47%</td>
<td>8%</td>
</tr>
<tr>
<td>Written language problems: boys</td>
<td>64%</td>
<td>16%</td>
</tr>
<tr>
<td>Written language problems: girls</td>
<td>57%</td>
<td>9%</td>
</tr>
<tr>
<td>School exclusion</td>
<td>39%</td>
<td></td>
</tr>
<tr>
<td>Of those, permanent exclusion</td>
<td>11%</td>
<td></td>
</tr>
</tbody>
</table>

Academic Outcomes

10k 12 year old twins from Netherlands Twin Register:

- Longitudinal data showed ADHD symptoms predicted lower level secondary school career at age 14-16
- Twins with more ADHD symptoms scored lower on educational achievement than their co-twins
- Children taking ADHD medication scored significantly higher on educational achievement than children with ADHD who did not use medication
- Association between ADHD and educational achievement was independent of genes and environmental factors
- Direct causal effect of ADHD on educational achievement

## Occupational Outcomes

<table>
<thead>
<tr>
<th></th>
<th>Unemployed</th>
<th>Student</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADHD</td>
<td>44%</td>
<td>13%</td>
</tr>
<tr>
<td>ADHD In Partial Remission</td>
<td>40%</td>
<td>21%</td>
</tr>
<tr>
<td>ADHD remission</td>
<td>22%</td>
<td>44%</td>
</tr>
<tr>
<td>Controls</td>
<td>3%</td>
<td>30%</td>
</tr>
</tbody>
</table>

Positive educational outcomes associated with treatment and/or remission

Job interview feedback

• Your CV was well presented and clear
• You presented well (appropriately dressed)
• You arrived 15 minutes late. We appreciate that you experienced delays to your journey but were not impressed that you arrived with a Starbuck’s coffee, drank it during the interview, and left behind the empty cup
• You gave long-winded and tangential responses to questions, often unnecessarily revealing irrelevant and personal information
Job interview feedback

• You seemed argumentative and confrontational at times (e.g. when disagreeing with the perspective of the panel)

• In future interviews we suggest you avoid:
  – chewing gum
  – offering gum to the interviewers
  – showing photos of your dog
  – using the ‘F’ word
CRIME: Pooled prevalence of ADHD in youth and adult offenders – 26-30% from 42 studies

Age - no significant difference between adults (>18 years) and youths (<18 years)

International - no difference between American, European and ‘other’ studies.

ADHD is associated with higher rate of recidivism (controlling for Antisocial Personality Disorder)

Mann-Whitney U test * p < .05, two-tailed test

Proportion of psychiatric morbidity in prisoners with and without ADHD

## INVERNESS STUDY 2: Pathways through Substance Transition among Offenders

**Substance Transitions in Addiction Rating Scale (STARS):**

- **A** – motivation for initiation (first drug)
- **B** – reason for maintenance of first drug
- **C** – reason for transition to other substances
- **D** – reason for maintenance of other substances

<table>
<thead>
<tr>
<th>All substance users</th>
<th>Conduct Disorder</th>
<th>ADHD Group Disorder group</th>
</tr>
</thead>
<tbody>
<tr>
<td>A: None</td>
<td>A: Sensation-seeking</td>
<td>A: Coping</td>
</tr>
<tr>
<td>B: Dependency, Sensation-seeking</td>
<td>B: Acceptance</td>
<td>B: Coping</td>
</tr>
<tr>
<td>C: Sensation-seeking</td>
<td>C: None</td>
<td>C: Coping, Dependency</td>
</tr>
<tr>
<td>D: Sensation-seeking, Acceptance</td>
<td>D: Coping, Dependency</td>
<td>D: Coping, Dependency</td>
</tr>
</tbody>
</table>

Young, et al. in press Dual Diagnosis.
Critical incident ratings made by prison staff

No significant association with ASPD
Significant association with ADHD (controlling for ASPD)

Young, et al. 2009, PAID
ADHD: A deadly disorder?

Danish national register follow-up of 1.92m: 32,061 with ADHD.

Estimated **Mortality Rate Ratios** adjusted for calendar year, age, sex, family history of psychiatric disorders, maternal/paternal age, parental education & employment status.

Most common cause of death amongst ADHD group was **accidents** - **77.8% of all unnatural deaths**

Mortality rate was higher in girls/women than boys/men (MRR 3.01 vs. 1.93, respectively)

Data from the UK GP Research Database (2001-2005; 3 million active patients)

Ratio of males to females receiving prescriptions (6.6:1) remains higher than the 4:1 gender ratio for ADHD indicating that males are more likely to be identified and treated with medication than females

Prescribing patterns decrease during adolescence

No patients were receiving ADHD medication by age 21

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

Susan Young*, Cildagh M Murphy* and David Coghil

Abstract

Attention deficit hyperactivity disorder (ADHD) is a common childhood disorder that frequently persists into adulthood. However, in the UK, there is a paucity of adult services available for the increasing number of young people with ADHD who are no longer attending high schools. Furthermore, there is limited research investigating the transition of young people with ADHD from clinical to adult services and little guidance on how to achieve this effectively. This paper reviews the difficulties of young people with ADHD and their families who are transitioning between services, receives transition from the child and adult health service’s perspectives and identifies barriers to the transition process. We conclude with recommendations on how to develop transition services for young people with ADHD.

Background

ADHD affects around 3–4% of UK children [1] and has a wide-ranging and detrimental impact on the wellbeing of individuals who may have a range of clinical, neurophysiological and psychological problems [2]. Common co-morbid problems in childhood include oppositional defiant disorder (ODD), anxiety disorder (AD), conduct disorder (CD), tic (TD) and mood disorder (MD) [3,4]. As children develop, they continue to suffer impairment from their symptoms. A meta-analysis of follow-up studies conducted by Freeman and colleagues [5] found that around 30% of cases continue to meet diagnostic criteria for ADHD at 25 years of age, with a further 90% of individuals suffering impairment from residual symptoms of ADHD. Co-morbid problems also persist and can develop in adulthood, including anxiety, mood problems and substance misuse [6]. The prevalence of ADHD in adults may be complicated by the presence of ADHD-symptoms, and associated difficulties including low self-esteem, interpersonal relationship problems, educational and occupational difficulties, risk-taking behaviors, poor social skills, delinquency and offending; even when ADHD has been recognized and treated, outcomes are often negatively affected [7,8]. These individuals are further disadvantaged by their cognitive and social deficits, impacts and poor attention, and may experience greater difficulty in achieving autonomy than their peers. Thus the transition between child and adult services occur at a time of increased vulnerability, when young people with ADHD may require guidance and support from trained care givers, including health care professionals. Data from the Multidisciplinary Treatment of Attention Deficit/Hyperactivity Disorder (MTA) study suggests that well thought through and organized evidence based treatment protocols can improve outcomes for those with ADHD [9–11]. However, an ADHD has not yet been widely extended by adult mental health services in the UK, which are estimated [12] and their services established clinical services offering planned transition to adult services for young people with ADHD. These services provision limitations, together with the symptoms and complications of young people with ADHD, make the transition process harder to manage, and increasing unique situations compared with either better accepted mental health disorders.

Within this context we will focus our discussion on the barriers to the transition process, the care gap between child and adult services, current models of transition and conclude with service recommendations.

Recommendations for the transition of services from adolescence to adulthood for young people with ADHD


Abstract

The aim of this consensus statement was to discuss transition of patients with ADHD from child to adult healthcare services, and formulate recommendations to facilitate successful transitions. An expert workshop was convened in June 2012 by the UK Adult ADHD Network (BRAIN), attended by a multi-disciplinary team of mental health professionals, allied professionals and parents. It was concluded that transitions must be planned through joint meetings involving referring services, patients and their families. Negotiation may be required to balance parental desire for continued involvement in their child’s care, and the child’s growing autonomy. Clear transition protocols can maintain standards of care, detailing relevant timelines, responsibilities of agencies and preparing concerned patients. Transition should be viewed as a process not an event, and should normally occur by the age of 18, however flexibility is required to accommodate individual needs. Transition should be regarded as a very important experiential, and adherence to clear recommendations is necessary to ensure affected transition and prevent dropout from services.

Background

Transition can be defined as the process of change from one stage (format or another stage (format). There are many transitions that an individual makes throughout life, be they through psychosocial stages of development [7] or stages of cognitive development [8]. And perhaps the most important transition is from adolescence to adulthood. This is a period of significant transition both in social and psychological terms, as well as in legal terms (i.e. legally becoming an adult at age 18). This is where young people are likely to move away from home, either to go to college/university or for job opportunities, start new relationships and assume new roles and responsibilities. This is also a period when many experiement in 18th, including alcohol and drug substance. Any decisions during this period is likely to have lasting lasting adverse effects on the young person’s development, minimization of their potential and possibly affect their psychological wellbeing. Young people with mental health conditions are particularly vulnerable during the transition period, and disruption of care during transition adversely affects their health, wellbeing and potential to lead a rich and rewarding life [15]. Poor transition leads to disruptions in continuity of care, disengagement from services and is likely to lead to worse clinical outcomes [16]. Ideally, transition should be planned, orderly and purposeful process, taking into account developmental and illness specific needs [17]. For the majority of patients transition is poorly planned, poorly executed and poorly experienced [18, 19].

ADHD and transition

Attention deficit hyperactivity disorder (ADHD) is estimated to affect up to five per cent of school-age children and adolescents in the UK [20], with a peak incidence in those aged between six and 12 years [21]. Although ADHD was previously thought of as a childhood condition, recent evidence from follow-up studies that 15% of children continue to have ADHD symptoms into adulthood [22].

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Costs of untreated ADHD: retrospective analysis of Danish Central Person Register data of people dx in adulthood

<table>
<thead>
<tr>
<th>TOTAL SOCIETAL COSTS (private + public costs)</th>
<th>Compared to general population (million)</th>
<th>Compared to siblings (million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aggregate costs of ADHD for individuals diagnosed as adults</td>
<td>DKK -3,605</td>
<td>DKK -2,779</td>
</tr>
<tr>
<td></td>
<td>£ - 343</td>
<td>£ -265</td>
</tr>
</tbody>
</table>

- Societal costs = individual/family + local/central government
- Includes income loss, income support, crime, victims, social services, education, healthcare, foster care
- More than half of these costs were paid by the public sector
- The main contributor to these costs was due to low labour market attachment (i.e. can’t get a job so supported by the state)

www.rockwoolfonden.dk
Systematic Review of long term outcomes

- Comparing two ages differing by 2 years or more
- 351-404 studies on long term outcomes (≥2 years) for participants with treated or untreated ADHD, focusing on:
  
  - Many studies reported on more than one outcome - over 600 outcome results analysed
  
  - Outcomes classified by treatment: pharmacological, non-pharmacological and combined

Do the LTOs of people with ADHD benefit from treatment?

- Compared to people without ADHD, 74% of LTOs were worse for untreated ADHD participants.
- 72% of LTOs showed benefit from treatment.

Does age of initiation of treatment make a difference?

- Studies divided into mid-range age at initiation of treatment (incl. all outcomes)
- Most studies: 8-12 years initiation
- **60-65% of outcomes improve with treatment regardless of age of initiation**
- Younger age of initiation benefits: self-esteem, social function and academic
- Older age of initiation: obesity and drug use

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With treatment, do some outcomes benefit more than others?

Compared with untreated ADHD:
• Most improved - driving, obesity, self-esteem, social function, academics + drugs
• Intermediate success: antisocial + service use
• Least improved - occupation

ADHD
Child Evaluation
A diagnostic interview of ADHD in children

ACE
A diagnostic interview of ADHD in adults

Available to download from the resources section of www.psychology-services.uk.com
Conclusions

- Common outcomes include accidental deaths, academic underachievement and occupational problems, including unemployment, social problems and disengagement from clinical services.

- Without any treatment, LTOs are substantially poorer compared with non-ADHD controls.

- With treatment, a substantial proportion of LTOs improve.

- Larger effect sizes are associated with combination treatment.
Conclusions

• But, even with treatment, 28% of outcomes did not improve. We need to improve treatment outcome for problems that seem more resistant to ‘standard’ treatments, e.g. antisocial, occupational

• We need to develop much better occupational interventions and stop children moving from classroom to courtroom

• Outcomes improve regardless of age-of-initiation and duration of treatment

• It’s never too late!!! But if we are to prevent negative LTOs we need to intervene early. Too many young people slip through the net and do not receive the treatment they need
Conclusions

• We need to find ways to keep young people with persisting symptoms engaged with healthcare services to get the treatment they need rather than self-medicate with illicit drugs.

• We need to help young people with ADHD to achieve and succeed in life. They can.

• We can’t work in silos but need to engage agencies to work together to identify, support and/or manage young people with ADHD (e.g. education, occupation, criminal justice).