



CLINICAL  
EXCELLENCE  
COMMISSION

**ATTENTION DEFICIT  
HYPERACTIVITY DISORDER  
IN CHILDREN AND ADOLESCENTS  
IN NEW SOUTH WALES – 2007**

**Final Report of the  
Special Review**

This document represents the final report of the Special Review of Attention Deficit Hyperactivity Disorder in Children and Adolescents which was conducted in New South Wales in 2007.

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## Foreword

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I am pleased to present the final report from the special review conducted on Attention Deficit Hyperactivity Disorder (ADHD) in children and adolescents in NSW.

This is the first state-wide independent review of ADHD in NSW and one of the few undertaken in Australia. The main aim was to determine whether clinical practice, including the use of stimulant medication, for the assessment, diagnosis and management of ADHD is in accordance with NSW Health Criteria for the Diagnosis and Management of ADHD in Children and Adolescents.

I would like to thank all the individuals and organisations who contributed their time and expertise to the development and conduct of the review and preparation of this report.



Professor Philip Mitchell  
Chairperson, ADHD Special Review Committee  
Head, School of Psychiatry, University of New South Wales



## **Executive summary**

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### **Aim of report**

The purpose of this report is to publish within the public domain the results of a review conducted by the Clinical Excellence Commission (CEC) into the assessment and management of Attention Deficit Hyperactivity Disorder (ADHD) in children and adolescents and the associated prescription of stimulant medication to treat this disorder in NSW. The review was triggered by concerns raised in April 2007 by the NSW District Court Judge Paul Conlon that stimulant medications may affect mental health and increase the likelihood of addiction and criminality.

This report aims to study the match between science, treatment guidelines and practice in ADHD management in NSW. The report studies only medical practice, and not the other relevant professional services in health, education and other agencies, which are integral to essential comprehensive management of this condition.

### **The Terms of Reference**

To inquire into the public health issues arising from the assessment and treatment of Attention Deficit Hyperactivity Disorder (ADHD) and the prescription of drugs associated with treating this disorder. The review is to:

1. Advise on the current development of clinical guidelines in Australia for the treatment of ADHD and on treatment via the prescription of the stimulant medications dexamphetamine and methylphenidate
2. Assess current practice in the assessment and treatment of ADHD
3. Undertake a clinical audit of a cross-section of medical practitioners approved under Section 29 of the Poisons and Therapeutic Goods Act 1966 to prescribe stimulant medication for ADHD, to assess whether current practice complies with the requirements of the Act and its regulations, which are referenced in the NSW Health Criteria for the Diagnosis and Management of Attention Deficit Hyperactivity Disorder in Children and Adolescents, Version 6, June 2004.

The focus of the review is on children and adolescents less than 18 years of age, but may also consider the impact of treatment and prescribing practice in adults.

### **NSW Prescribing Regulations**

In NSW the prescribing of stimulant medication for the treatment of ADHD in children and adolescents is restricted to specialist (public and private) prescribers. It is authorised and monitored by the Pharmaceutical Services Branch (PSB) of the NSW Department of Health. Specialist prescribers can apply to the PSB to be given authority to prescribe stimulant medication which must be in accordance with the

NSW Health “Criteria for the Diagnosis and Management of Attention Deficit Hyperactivity Disorder in Children and Adolescents” (Attachment 1).

## **NSW and Australian Treatment Guidelines**

The National Health & Medical Research Council (NHMRC) Guidelines on the management of ADHD were rescinded in 2006, in line with NHMRC practice of periodic review of guidelines. They are presently being updated. There are therefore, no extant officially-endorsed Australian national guidelines on the management of children and adolescents with ADHD.

International guidelines of evidence-based practice in the management of ADHD indicate a general consensus (e.g. US and European guidelines, American Academy of Paediatrics, 2001, and Taylor et al, 2004). For the purposes of this review we used the NSW Health Criteria for the Diagnosis and Management of Attention Deficit Hyperactivity Disorder in Children and Adolescents, Version 6 June 2004 which were developed by the Stimulant Subcommittee of the NSW Health Pharmaceutical Services Branch. These were the guidelines in place during most of the 12-month period upon which this review focused (1 June 2006 to 31 May 2007). The 2007 version of the NSW Guidelines was introduced on May 2007, and did not differ substantially from the 2004 Guidelines (Attachment 2). Since their origin in 1989, the NSW guidelines have been regularly revised to reflect the current international consensus.

## **Structure of the Review**

To identify current clinical practice, the CEC conducted: i) a self-report survey of medical practitioners who prescribe stimulant medication; and ii) a file review of a sample of patients who were prescribed this medication. Additionally, the CEC obtained: a) NSW stimulant prescribing approval data from the NSW Health Pharmaceutical Services Branch and b) Commonwealth prescribing data (both NSW and national figures) on stimulants for children and adolescents.

Each component of the review used the common central “window” of 1 June 2006 to 31 May 2007 as this allowed for the inclusion of the most recent prescribing data.

# Major Findings

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## Term of Reference 1

### Clinical Guidelines

There are no extant officially-endorsed Australian national guidelines on the management of ADHD in children and adolescents. The NSW Guidelines (NSW Health Criteria for the Diagnosis and Management of Attention Deficit Hyperactivity Disorder in Children and Adolescents, Version 6 June 2004 and Version 7 May 2007) are consistent with best evidence-based international practice and comprised the “benchmark” standard for the adequacy of diagnostic and management practice used in this review.

## Term of Reference 2

### Current Practice – Prescriber Survey

A survey of 207 prescribers (56% of the eligible sample of medical practitioners) was undertaken using a detailed questionnaire. This survey demonstrated that children and adolescents with ADHD comprised the minority of most practices. Nonetheless, most prescribers were very experienced in the treatment of this condition, having treated such children for a median of 17 years.

Prescribers used the recommended Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) and the International Classification of Diseases (ICD-10) structured diagnoses in the vast majority of cases (93%), and detailed questions on the specific criteria used for diagnosis confirmed this.

Prescribing practice appeared to be thoughtful and cautious. Practitioners utilised a range of information from patients, families and relevant professionals (particularly teachers); regularly monitored for the many aspects of the condition and its impact on patients and parents; used multiple means of assessing for potential benefit; used more than just medications, regularly employed other treatments such as speech therapy or behavioural management; and provided a wide range of information to both patients and families. There was a judicious and conservative use of other medications in addition to (or instead of) stimulants. The prescribers observed most patients to respond well to stimulants, and that only a minority of patients experienced significant adverse effects.

There was widespread awareness of both versions of the NSW Health Guidelines on the use of stimulants in children and adolescents with ADHD.

Most prescribers indicated major gaps in the following services critical to the optimal management of ADHD in this age group, i.e. educational support, behavioural therapy, family therapy and psychological services such as psychometric assessment.

## Term of Reference 3

### Current Practice – medical file review

A review of 137 files of 27 prescribers (64% of the targeted number of files) was undertaken using a structured audit instrument. In consultation with A/Professor Judy Simpson of the University of Sydney, the random selection of files to be audited was determined stratifying by the following prescriber characteristics: specialty (paediatrician, child psychiatrist, adult psychiatrist, and other) and ADHD patient volume. Pairs of file reviewers comprising both an experienced medical specialist and nurse independently rated all files.

The findings of the file review were consistent with the prescriber survey in indicating that diagnostic and prescribing practices followed the NSW Guidelines in most cases.

The vast majority of files (84% - 96%) demonstrated: comprehensive assessments; use of multiple sources of information: use of DSM-IV diagnostic criteria; prescription of stimulant medication consistent with guidelines; regular and comprehensive reviews; and the use of a broad (multi-modal) treatment plan embracing other management approaches such as behavioural, family or speech therapies. The median patient age at initial prescription of stimulants was 8 years of age.

Further to the file review data collected on the audit tool, additional and valuable insights were gained about the management of patients with ADHD that are reflected in the following observations made by one of the expert medical review teams.

### Observations on the file review by one of the independent medical reviewers:

*“Clinically the audit showed that there was not inappropriate or casual prescribing for ADHD in these practices. There was nothing to suggest excessive dosages. However, what was clear was that many of the children and families were battling with very complex situations – in the diagnosis of the child, the comorbidities, and the interactions between the parents, siblings and the identified child. For many, the ADHD was a small part of the overall clinical picture but its ramifications were disproportionate — many children had significant learning difficulties, social problems, and other developmental conditions and were living in dysfunctional and sometimes chaotic families, including changes in carers. Several children were being reared by grandparents and a number were in foster homes or experiencing multiple placements. Domestic violence and parental substance abuse were not uncommon.*

*The doctors’ documentation reflected their concerns about such situations and comorbidities. Their determination to help the whole child and family and to enlist additional resources (such as schools in particular, but also speech pathologists, psychologists and occupational therapists) was very apparent. We saw the benefit of the recent Federal Care Plans. The important role of teachers and school counselors - both in providing information and establishing special opportunities for the child - was noted. Doctors working in community health centres had files covering many years and several professionals; the centres also had good contacts with schools. The files were excellent and management multimodal.*

*The prescription of stimulants was cautious. Often parents discontinued medication and the negative results became apparent in school reports or an increase in family problems because of disruptive, disorganised or inattentive behaviour. Medication was quite often appropriately not used on weekends or holidays.*

*The overall impression was of conscientious doctors giving plenty of time trying to offer the best total management in these very complex situations, in spite of their frustration at the lack of additional resources when they felt that the child and family would have benefited from them.”*

## **NSW and Commonwealth Prescribing Data**

### *NSW*

Data from the NSW Pharmaceuticals Services Branch using all notified prescriptions recorded in the Pharmaceutical Drugs of Addiction System (PHDAS) indicated that the number of patients approved for treatment with stimulants for ADHD for the period 1 June 2006 to 31 May 2007 (aged less than 18 years at the last prescription/authority) was 19,338, i.e. 1.5% of 4-17 year-olds in the State. There were 15,466 males and 3,872 females.

### *Commonwealth*

We were able to obtain Commonwealth prescribing data on stimulant prescribing for 4-17 year-olds in NSW and nationally for the same period 1 June 2006 to 31 May 2007. These PBS (Pharmaceutical Benefits Scheme) figures indicated that (the equivalent of) less than five children per thousand (i.e. 0.5% of this age group) in NSW were receiving stimulant medications on any one day. Furthermore, the national figures indicated that NSW prescribing of stimulants was no more prevalent than in Australia in general.

The difference between the Commonwealth (0.5%) and State (1.5%) figures may be explained by the Commonwealth PBS data not including either private scripts or scripts for which the price was under the General Co-Payment.

As the prevalence of ADHD in Australia is up to 11% of children and adolescents, we would consider that the rate of prescribing of stimulants for ADHD in NSW (0.5% to 1.5%) is conservative.

## **Conclusions**

These four lines of evidence (the survey of prescribers, the file review and the NSW and Commonwealth Prescribing Data) are all consistent in indicating that the prescription of stimulant medications in NSW for children and adolescents is conservative and in line with State guidelines. For the vast majority of prescribers and patients, the assessment, diagnosis and management of ADHD in children and adolescents in NSW is consistent with best quality international evidence-based practice. Practice is comprehensive, multimodal and cautious.

There are, however, significant gaps in the availability of appropriate ancillary services such as educational support, behavioural therapy, family therapy and psychological services (including psychometric assessment).

Furthermore, it was striking to the Review Committee that there had been no prior audit of prescribing practice for stimulants in NSW. This has been despite all medical practitioners agreeing to this as a criterion for prescribing approval, the clear intent of the Pharmaceutical Services Branch to undertake such audit, and long-standing advocacy from the Stimulant Subcommittee for appropriate resources to enable this.

## Recommendations

### **Recommendation 1:**

The current NSW Department of Health Guidelines on the Diagnosis and Management of ADHD in Children and Adolescents should be endorsed as the “benchmark” standard in this State.

### **Recommendation 2:**

The current standard of medical practice in the diagnosis and management of ADHD in NSW should be maintained and enhanced. This will require the provision of high quality professional continuing education, the gathering and dissemination of appropriate data, and active encouragement of research activities.

### **Recommendation 3:**

It is essential to create formal interagency collaborations (particularly between the Departments of Health and Education and Training) to develop comprehensive services for the management of these patients.

### **Recommendation 4:**

That the NSW Department of Health works closely with State and Federal agencies to maximise utilisation and provision of resources. Major areas for focus are educational services, behavioural management, speech and language therapy, occupational therapy, family therapy and psychological services.

### **Recommendation 5:**

To maintain appropriate public confidence in the management of ADHD in this State, there needs to be adequate resourcing of the Pharmaceutical Services Branch of NSW Department of Health to allow: regular monitoring of, and reporting on, stimulant prescribing; regular updating of guidelines; provision of high quality professional continuing education; and utilisation of the prescribing data base for research purposes.

### **Recommendation 6:**

The detailed findings of this review should be made available to the body responsible for the current updating of the national Australian Guidelines to inform that process.

### **Recommendation 7:**

The Department of Health should develop, as a priority, high quality health promotional material to inform the community, the media and the professions about current evidence-based management of ADHD.

# Background

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## Introduction

In April 2007, NSW District Court Judge Paul Conlon was reported in the *Daily Telegraph* as stating that many young offenders had been diagnosed with ADHD and previously treated with stimulant drugs over extended periods of time, that according to the opinion of a psychiatrist may affect their future mental health and likelihood of addiction to other drugs which in turn may lead to criminality.

In May 2007 the CEC was commissioned by the NSW Director-General of Health to conduct a review into the public health issues arising from the assessment and treatment of Attention Deficit Hyperactivity Disorder (ADHD) and the prescription of drugs associated with that treatment regime. The focus of the inquiry was to be on children and adolescents less than 18 years of age.

An expert review committee was established in May 2007 and was chaired by Professor Philip Mitchell, Head, School of Psychiatry at the University of New South Wales.

There has been no such prior independent review of the assessment and management (including stimulant prescribing practice) of ADHD for children and adolescents in NSW, though there have been prior reports of trends in stimulant prescribing using the NSW Pharmaceutical Services Branch database (Salmelainen, 2002). A report into the Diagnosis and Management of ADHD in Western Australia was published in 2002 (WA Office of Mental Health, 2002, 2005). Subsequently, there has been reporting of geographic and socio-economic variability of prescribing in Western Australia (Calver et al, 2007).

## Prevalence and Causes of Attention Deficit Hyperactivity Disorder

Attention Deficit Hyperactivity Disorder (ADHD) is a neurodevelopmental condition which compromises organisation, control, learning, performance and behaviour. Current models for understanding this condition emphasise impairments of executive functioning and associated neurocognitive mechanisms (Brown, 2006; Castellanos et al, 1997; 2006)

ADHD is one of the most common childhood psychiatric and neurodevelopmental disorders (Pliszka et al, 2007). A recent review and meta-regression analysis of international epidemiological studies has reported a world-wide pooled prevalence of 5.3% (Polanczyk et al, 2007). In Australia, the Child and Adolescent Component of the National Survey of Mental Health and Well-being reported ADHD to be present in 11% of children and adolescents (Sawyer et al, 2000). Most studies have found a higher prevalence of ADHD in boys than girls, particularly in those presenting to clinical services.

This condition has been shown to be a highly heritable disorder, with the likelihood of multiple genes being involved. It is frequently co-existent (“comorbid”) with learning disability, suggesting an associated abnormality in language and ‘reading’ genes. Each of these genetic variations slightly increases the relative risk for ADHD, suggesting that ADHD is a complex disorder influenced by the interaction of multiple aetiological factors.

Environmental risks include pre- and peri-natal factors including alcohol, nicotine and lead exposure. Gene/environment interactions may also be important, and family and educational factors may be adverse or protective. Structural and functional brain imaging studies suggest that neural circuits associated with executive function such as control of attention, including prefrontal and striatal areas, are affected in ADHD.

About 70% of children and adolescents with ADHD will have another neurodevelopmental disorder such as anxiety, tics, motor incoordination, depression, conduct disorder, oppositional defiant disorder and autism spectrum disorder (MTA, 1999). These comorbidities add to the complexity of the management of ADHD.

## **Treatment of ADHD**

Comprehensive and individually-tailored multimodal assessment and treatment of children and young people with ADHD is recommended by most authorities. This should include (where appropriate) assessment of hearing and vision, language and speech, learning and academic skills, and perceptual motor skills. Intervention may include speech pathology, educational support strategies, occupational therapy and specific management of behaviour and emotions as required. The National Institute for Mental Health collaborative multi-modal treatment study of children with ADHD (MTA, 1999) was developed to clarify issues such as the relative merits of medication and psychosocial intervention and to test the benefits of combined interventions. Over the initial 14-month study period, it found that the effects of intensive stimulant methylphenidate alone were equal to those of intensive psychosocial intervention and methylphenidate combined. With these intensive research strategies, the combined group achieved an equivalent degree of improvement with a significantly lower dosage of medication. The recently published three-year follow-up of this group reported that all groups showed improvement over baseline (Jensen et al, 2007)]. As the likelihood of side effects from medication is related to dosage, where possible lower dose medication as part of a combined intervention is preferable to higher dose medication alone despite equivalent treatment response. However, real-world management in the community cannot match the intensity of the research treatments applied in this study.

Stimulant medications are generally recommended as first-line treatments for ADHD. These include methylphenidate (MPH) and dexamphetamine (DEX). Appropriate dose levels should preferably initially be titrated on an individual basis using immediate-release formulations (National Prescribing Service, 2005 and 2007). In general, 80-90 percent of ADHD children respond to an adequate dose of one or other stimulant. Since psycho-stimulant side effects are dose-related, the treatment aim should be to determine the lowest effective dose which produces the maximum therapeutic effect whilst keeping adverse effects to a minimum.

Response to both MPH and DEX is individual and cannot be predicted accurately on a dose/body weight basis. The average internationally-recommended dose for MPH ranges from 5 mg to 60 mg per day, whilst that for DEX ranges from 2.5 mg to 40 mg per day. However, given the variable nature of psycho-stimulant response, some children and adolescents may benefit from higher doses. Methylphenidate is available in both immediate and long-acting (*Ritalin LA* and *Concerta XL*) forms. In Australia, dexamphetamine is only available as an immediate-release preparation.

There are also non-stimulant medications which are used in the management of patients with ADHD. Atomoxetine (*Strattera*) is a selective noradrenaline transporter blocker which is approved for the treatment of ADHD in children over six, and adolescents and adults who were treated as adolescents. Atomoxetine is appropriately used for children who have adverse reactions to stimulant medications such as effects on appetite, sleep, onset of tics. Clonidine (*Catapres*) is a noradrenergic alpha-receptor agonist which has mild sedating effects and is used in low dose range in combination with stimulant medications for sedation at night, or for the ADHD itself. It has significant risk of adverse effects and over dosage.

## **NSW regulations regarding prescribing of stimulant medication**

In NSW the prescribing of stimulant medication for the treatment of ADHD in children and adolescents is restricted to specialist (public and private) prescribers, and is authorised and monitored by the Stimulants Subcommittee and the Pharmaceutical Services Branch of the NSW Department of Health. The Stimulant Subcommittee is a subcommittee of the Medical Committee established under the Poisons and Therapeutic Goods Act. The Medical Committee advises the NSW Health Director-General on applications by medical practitioners to prescribe medications that are classified as potential or actual drugs of addiction.

The Stimulant Subcommittee was formally constituted in 1989 (there had previously been an informal advisory panel since 1983) to assist the Medical Committee with the challenges posed at the time by the emerging clinical and academic awareness of the high prevalence of ADHD and the increasing use of stimulant medication to treat this disorder. The Stimulant Subcommittee provides the guidelines for the prescription of stimulant medications for ADHD in NSW (Attachments A and B). These guidelines emphasise comprehensive management and provide details on the appropriate age range and recommended maximum dosage, as well as monitoring requirements. The guidelines have been formally revised six times since their inception. The Stimulant Subcommittee continually monitors evidence-based research and clinical practice trends.

## NSW Stimulant Prescribing Approval Data

There have been prior reports from the PSB of stimulant medication and prescribing trends in NSW for children and adolescents (Salmelainen, 2002) and adults (Salmelainen, 2004). The 2002 report on children and adolescents (using NSW prescribing approval data) reported that at the end of 2000, there were almost 16,000 children and adolescents in NSW on stimulant medication for the treatment of ADHD, representing a rate of 11.3 per 1,000 (or 1.1 percent) of people aged 2-17 years. The Stimulant Subcommittee is regularly updated on trends in prescriptions of stimulants in NSW.

## Structure of the Review

To identify current clinical practice, the CEC conducted:

- i) A self-report survey of medical practitioners who prescribe stimulant medication
- ii) A file review of a randomly allocated sample of patients who were prescribed stimulant medication.

Additionally, the CEC obtained:

- a) NSW stimulant prescribing approval data from the NSW Health Pharmaceutical Services Branch *Pharmaceutical Drugs of Addiction System* database (PHDAS)
- b) Commonwealth prescribing data (both NSW and national) on stimulants for children and adolescents.

To allow for inclusion of the most current prescribing data, the Review determined the period 1 June 2006 to 31 May 2007 as the period of study, i.e. the central study “window” for all components of the Review. The version of the NSW guidelines which was current for most of that period was the June 2004 (TG 181/6) version of the Criteria for the Diagnosis and Management of Attention Deficit Hyperactivity Disorder in Children and Adolescents. This was replaced by the May 2007 version. We therefore used the 2004 version as the “benchmark” standard against which practice in NSW during the “window” was evaluated.

The 2004 guidelines required a DSM-IV diagnosis of ADHD; age range 4-17 years; dose of DEX no more than 1 mg/kg/day; dose of MPH no more than 2 mg/kg/day; absence of significant psychiatric comorbidity; and absence of significant adverse effects such as severe tic. Special application was required for children less than 4, and for higher doses of DEX or MPH.



# **Part 1 – Findings: Self-report Prescriber Survey**

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## **Survey Method**

### **Sample selection**

The target population was public and private medical practitioners who:

- i) Prescribed (based on notified prescriptions) or were issued with an individual authority to prescribe stimulant medication for patients aged less than 18 years (at the time of the prescription issue date) in the period 1 June 2006 to 31 May 2007. (Note: A small number of General Practitioners were excluded whose prescribing was isolated - they were most likely prescribing under specialist referral).
- ii) Those who did not prescribe for a patient or were not issued with an individual authority to prescribe stimulant medication for the period 1 June 2006 to 31 May 2007 **but** who were either generally authorised to prescribe stimulant medication or were authorised as “Other Designated Prescriber”

This time-frame was chosen as it provided data on prescribers and patients over the last 12 months up until the most recent that was available from the PHDAS. The total number of approved prescribers in this period was 389, comprising 226 paediatricians, 83 child psychiatrists, 39 adult psychiatrists, and 41 other prescribers (neurologists, general practitioners and other medical practitioners).

### **Survey procedure**

An explanatory letter (Appendix A) and structured survey (Appendix B) were sent to all 389 approved prescribers in mid-September 2007 with the request for completed surveys to be returned to the CEC by end-September. Those who did not respond were contacted by telephone in early October and encouraged to complete and return the survey.

### **Survey instrument**

A survey which had been developed by the Stimulant Subcommittee (but not previously sent to prescribers) was revised over several drafts and piloted by members of the Review Committee. The final survey comprised 29 questions, a number of which contained a series of subsidiary questions. The survey focused on prescriber details, practice details, and diagnosis and treatment practices.

### **Coding and data entry**

All data was entered into Excel and uploaded to SAS so that simple totals could be provided in regard to overall responses. To ensure accuracy of data, 1 in 5 data entries were checked for errors. Only 3 errors were detected and corrected, thereby providing confidence in the validity of the data.

### **Data analysis and reporting**

All analyses were undertaken by Paul Grant (Biostatistician, CEC) under the supervision of A/Professor Judy Simpson, Department of Public Health, University of Sydney.

## **Survey Results**

### **Sample**

Surveys were sent to 389 prescribers. The final sample comprised the 207 prescribers who returned a completed survey. 127 prescribers did not return the survey and 33 surveys were re-forwarded as “return to sender”. 367 prescribers (207 + 127 + 33) were therefore considered “eligible” to complete the survey, and therefore comprised the “denominator” for successful survey response. A further 22 were deemed “ineligible” – one was deceased, with the remaining 21 having either moved interstate, retired or taken maternity leave. The final response rate was therefore 207/367, i.e. 56.4%.

### **Practitioner details**

The final survey sample comprised 134 males (65% of the total) and 69 females (34%), with a mean age of 51.1 years (95% confidence levels 49.9 – 52.4 years). There were 121 paediatricians (59%), 56 child psychiatrists (27%), 11 adult psychiatrists (5%) and 17 “other” medical practitioners (8%).

### **Practice details**

109 prescribers (54%) worked predominantly in the private sector, while 93 (46%) mainly worked in the public sector. 156 (78%) worked either in Sydney or another metropolitan region (such as Newcastle or Wollongong) and 45 (22%) were based in a rural area. Most practitioners had many years experience in treating children and adolescents with ADHD, with a median of 17 years (range 1-40 years) experience in treating this condition.

Patients with ADHD comprised a minority of most practices:

- For 45% of prescribers, children and adolescents with ADHD accounted for less than 10% of their total patients
- For a further 47%, those with this condition accounted for only 10-50% of their patients
- For 7% of practices, patients with this condition comprised 51-90% of their patients
- Only one practice (0.5% of the sample) had patients with this condition accounting for more than 90% of their patients

The median number of newly diagnosed patients per annum was 24 (range 0-730), while the number of previously diagnosed patients seen each year was a median of 120 per practice (range 0-3,650). These figures are consistent with some of the data detailed above in indicating that for most practices, ADHD comprised a minority of patients treated, but that there are a small number of practices seeing large numbers of children and adolescents with ADHD.

[Note: All figures were “grossed up” to a yearly figure using a 52-week year. This could lead to a distortion of the figures as it is unlikely that all practices are open for 52 weeks a year. However as all figures were grossed up by the same amount overall comparisons could be made].

### **Diagnosis**

When making the diagnosis of ADHD, the following proportion of respondents “mostly” (always or usually) used the following procedures:

- Interview with patient (98%)
- Interview with parents (100%)
- Formal behaviour questionnaire completed by parents (76%)
- Reports from teachers (93%)
- Formal behaviour questionnaire completed by teachers (71%)
- Direct observation outside office setting (14%)
- Psychometric testing (69%)
- Physical examination (80%)
- EEG (7%)
- Possible alternate diagnosis (90%)
- Assessment of developmental milestones (98%)
- Assessment of vision and hearing (76%)
- Family history of ADHD or psychiatric illness (100%)
- Family functioning (98%)
- The continuous performance test (CPT; 19%)

Ninety-three percent of prescribers used DSM-IV or ICD-10 criteria to make the diagnosis of ADHD.

In making the diagnosis of ADHD, the following proportions of prescribers agreed (strongly or somewhat) that the following features were necessary:

- Symptoms present across multiple settings (98%)
- Significant impairment of social functioning (99%)
- Duration of at least six months (98%)
- Onset of symptoms prior to age seven years (92%)
- Symptoms not better explained by another disorder (91%)

## Treatment

The median youngest age that prescribers would consider using stimulants to treat ADHD was 5.0 years (mean 4.8 years; 95% confidence levels 4.6 – 5.1 years).

Stimulants were considered the first-line of treatment for ADHD for:

- Less than 50% of patients (33% of prescribers)
- 51-75% (28% of prescribers)
- 76-85% (by 18%)
- More than 85% (by 21% of prescribers)

The percentage of patients who were observed by prescribers to significantly improve with stimulants was:

- Less than 50% of patients (2% of prescribers)
- 51-75% of patients (24% of prescribers)
- 76-85% of patients (42% of prescribers)
- Over 85% of patients (34% of prescribers)

Patients prescribed stimulants were observed to experience adverse effects of sufficient severity to lead to cessation or change of medication in the following proportions:

- 0-5% of patients (in the experience of 54% of prescribers)
- 6-10% of patients (26% of prescribers)
- 11-15% of patients (13% of prescribers)
- 16-20% of patients (5% of prescribers)
- Over 20% of patients (2% of prescribers)

The following proportions of prescribers mostly provided the following information to patients and/or their families:

- General information on ADHD (100%)
- Useful resources for ADHD (82%)
- Details on risks and benefits of stimulants (100%)
- Details on risks and benefits of other medications (86%)
- Behavioural treatments (95%)
- Other therapies (29%)

The following elements were routinely included in prescribers' management of ADHD for these proportions of prescribers:

- Treatment objectives and measures of outcome (97%)
- Duration of treatment (79%)
- A system for communication between sessions between prescribers and patients, caregivers and others (80%)
- Monitoring of compliance with treatment (83%)
- Monitoring and recording of adverse effects (97%)
- Monitoring of effectiveness of treatment (96%)
- Updating family knowledge of ADHD (67%)
- Consideration of alternative treatments (68%)

When prescribing stimulants, the following proportions of practitioners mostly informed the patient and/or the family of the following:

- Risks and benefits of treatment (100%)
- Changes to expect (100%)
- Dosage and administration schedule (100%)
- Importance of complying with dosage (99%)
- Possible adverse effects (100%)
- Significance of possible adverse effects (99%)
- Current consumer medicine information (70%)
- What to do if something is wrong (98%)

In terms of other therapies, the following proportions of prescribers mostly informed their patients of:

- Relevant developmental therapies such as speech therapy (90%)
- Basic behaviour management techniques in the home (95%)
- Basic behaviour management techniques in the school (78%)
- A trial of non-stimulant medication (43%)

When commencing treatment, prescribers were in contact with their patients and/or families in the first three months at the following frequencies:

- More than once a week (2% of prescribers)
- About once a week (15%)
- About once a fortnight (33%)
- About once a month (36%);
- About once or twice over the three months (14%)

Once stabilised, patients were reviewed at the following rates:

- Monthly or more frequently (2%)
- Every 2-3 months (32%)
- Every 4-6 months (63%)
- Each 4-12 months (3%)

When conducting a routine review of a patient on stimulants, the following proportion of prescribers normally assessed the following:

- Weight (96%)
- Height (91%)
- Blood pressure (67%)
- Incidence and severity of adverse effects (98%)
- Compliance with dosing and administration schedule (96%)
- Effect on family functioning (91%)
- Need for continuing medication (93%)
- Target symptoms of ADHD (91%)
- Academic progress (97%)
- School behaviour (99%)
- Social relationships (92%)
- Family functioning (93%)

The following methods were “mostly” used for monitoring the effectiveness of stimulant medication:

- Interview with patient (99% of prescribers)
- Interview with parent (100%)
- Diary on target symptoms (11%)
- Behaviour scale rated by teachers (39%)
- Teacher reports (79%);
- Reports from other professionals (65%)
- Reports from other significant adults (27%)
- Medication-free holidays (60%)
- Psychometric testing (31%)
- Direct observation outside office setting (8%)
- Continuous Performance Test (CPT) (10%)

The following medications were sometimes used in conjunction with stimulants:

- Clonidine (75%)
- Tricyclic antidepressants (27%)
- SSRI antidepressants (66%)
- Other antidepressants (14%)
- Anti-epileptic medications (55%)
- Atypical antipsychotics (71%)
- Conventional antipsychotics (12%)

### **Familiarity with NSW Health Guidelines on ADHD Management**

83% of prescribers were familiar with the current (2007) guidelines, while 73% were familiar with the 2004 guidelines (which were active during most of the period of the file audit period of 1 June 2006 to 31 May 2007).

### **Gaps in services**

The following proportions of prescribers perceived gaps in the provision of good quality ADHD services in the following areas:

- Educational services (62%)
- Behavioural therapy (76%)
- Family therapy (74%)
- Psychometric evaluation (51%)
- Dietary intervention (13%)

## Discussion of Survey Findings

The survey demonstrated that children and adolescents with ADHD comprised the minority of most practices. Nonetheless, most prescribers were very experienced in the treatment of this condition, having treated such children for a median of 17 years.

Prescribers used the recommended DSM-IV and ICD-10 structured diagnoses in the vast majority of cases (93%), with detailed survey questions on the specific criteria used for diagnosis confirming this.

The prescribers observed most patients to respond well to stimulants, and that only a small minority of patients experienced significant adverse effects.

Prescribing practice appeared to be thoughtful and cautious. Practitioners utilised a range of information for diagnosis from patients, families and relevant professionals (particularly teachers); regularly monitored for many aspects of the condition and its complications for patients and parents; used multiple means of assessing for potential benefit; used more approaches than only medications, regularly also employing other treatments such as language therapy or behavioural treatment; and provided a range of information for patients and families. There was a judicious and conservative use of other medications in addition to (or instead of) stimulants.

There was widespread awareness of both versions of the NSW Guidelines on the use of stimulants in children and adolescents with ADHD.

Most prescribers indicated major gaps in the following services critical to the optimal management of ADHD in this age group: educational services, behavioural therapy, family therapy and psychological services.

### **Limitation of survey:**

While the survey response of 56% of prescribers was excellent, the lack of response from 44% of the eligible sample limits the capacity to generalise from these findings.



## Part 2 – Findings: File Review

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### File Review Method

#### Sample selection

The target population was public and private medical practitioners who had “treated” children and adolescents with ADHD aged less than 18 years during the period 1 June 2006 to 31 May 31, i.e. an authority was issued or a prescription notified during that “window”.

#### Survey procedure

The legal framework allowing access to files of both private and public practitioners was under section 71 of the NSW Public Health Act 1991. The NSW Health Director-General gave approval for such a clinical audit under this section for the period 13 September 2007 to 30 November 2006 (Appendix C). Subsequently the Certificate of Authority was extended to 21 December 2007 (Appendix D) and the Terms of Reference extended to the 31 January 2008 (Appendix E). Correspondence was sent to all prescribers randomised to the file review (Appendix F). Endorsement for the audit was sought from the relevant professional colleges (see letter from the Royal Australian and New Zealand College of Psychiatrists, Appendix G).

In consultation with A/Professor Judy Simpson of the University of Sydney, the selection of files to be audited was determined by stratifying the following prescriber characteristics: clinical specialty (paediatrician, child psychiatrist, adult psychiatrist, and other), and ADHD patient volume.

After excluding inactive prescribers and stratifying by both specialty and patient numbers, the following numbers of prescribers in each stratum were determined (there were a total of 247 eligible prescribers who had prescribed for children and adolescents during the study window):

Specialty	Patient Numbers			Total
	Low 1-10	Medium 11-100	High >100	
Paediatrician	36	73	55	164
Child Psychiatrist	25	13	2	40
Psychiatrist	26	4	0	30
Other	2	11	0	13
<b>TOTAL</b>	89	101	57	247

The review proposed to sample the following numbers of prescribers in each stratum:

<b>Specialty</b>	<b>Patient Numbers</b>			<b>Total</b>
	Low 1-10	Medium 11-100	High >100	
Paediatrician	5	10	10	25
Child Psychiatrist	5	5	2	12
Psychiatrist	5	4	0	9
Other	2	5	0	7
<b>TOTAL</b>	17	24	12	53

This sample comprised 21% of active prescribers. This involved sampling approximately 21% of prescribers with each level of patient numbers (low, medium, high), while maintaining reasonable numbers of each type of specialty.

The proportion of patient records to sample for each prescriber was 1% of all 18,923 patients of the above 247 active prescribers, i.e. at least 190 patients. It was projected that a completely random sample of at least 210 patients would enable estimation of the proportion of patients not diagnosed or dosed according to guidelines within the following limits of precision:

- For a proportion of 5%:  $5\% \pm 3\%$
- For a proportion of 10%:  $10\% \pm 4\%$

These limits of precision were projected to be widened to some unknown extent, depending on how similar the responses of the same prescriber were. To restrict the effect of this lack of independence among patients of the same prescriber, it was decided to use a scheme to sample no more than five patients per prescriber, giving the following projected numbers:

- For prescribers with 1-10 patients (low): 2 patients (or 1 for those with only 1 patient)
- For prescribers with 10-100 patients (medium): 5 patients
- For prescribers with > 100 patients (high): 5 patients
- This would give a maximum of  $17 \times 2 + 24 \times 5 + 12 \times 5 = 34 + 120 + 60 = 214$  patients.

### **File Reviewers**

We used pairs of reviewers, each pair comprised a senior experienced child psychiatrist or paediatrician, and a nurse with extensive prior experience in clinical file audit. Each reviewer examined and rated the files independently, after which time the pair met together to come to a consensus agreement concerning each file. Prior to examining files, each reviewer was trained in the audit instrument.

The medical clinicians and the proportion of files they reviewed were as follows: Sheila Metcalf (retired child psychiatrist, 76% of files); Brian Kearney (paediatrician, 14% of files); and Jim Friend (child psychiatrist, 10% of files). The nurses were: Alexandra Warner (86% of files); and Bernadette King (14% of files).

### **Documentation Audit Tool**

The Documentation Audit Tool (Appendix H) was a modification (used with the permission of author) of a similar instrument developed by Vreeman et al (2006) in the US.

### **Coding and data entry**

All data was entered into Excel and uploaded to SAS so that simple totals could be provided in regards to overall responses. The data was then split by clinical speciality to compare one speciality to another.

To ensure accuracy of data, one in five data entries were checked for errors. 18 errors were detected and corrected, thereby providing confidence in the validity of the database.

### **Data analysis and reporting**

All analyses were undertaken by Paul Grant (Biostatistical Officer, CEC) under the supervision of A/Professor Judy Simpson, Department of Public Health, University of Sydney.

## **File Review Results**

### **Sample**

Patient files of 27 prescribers were reviewed – 51% of the projected 53 prescribers. A further eight prescribers (in addition to the 27) agreed to auditing of their files, but the time constraints of the Review did not allow for this.

137 patient files (of those 27 prescribers) were reviewed in detail – 64% of the projected 214 files.

Of these 137 files, ten were excluded from the quantitative analysis detailed below. The reasons for exclusion were (one patient each point):

- Inadequate documentation
- Over 18 years of age
- Patient not available to give consent
- No mention of ADHD in file and no stimulants prescribed
- Patient had multiple diagnoses. If ADHD was significant, it was only one component of the patient's psychopathology
- Patient was seen for a complex degenerative condition. Methylphenidate had been prescribed by another practitioner

- No documented evidence of stimulant prescriptions and no documented evidence of the diagnosis of ADHD
- Stimulants prescribed by another doctor. No assessment of ADHD
- Stimulants prescribed by another doctor
- Very brief trial on stimulant medication

58 (46%) of the patients were under the care of paediatricians, 31 (25%) under child psychiatrists, 11 (9%) under adult psychiatrists, and 25 (20%) under other medical practitioners.

107 (86%) of the patients were male and 18 (14%) were female. The mean current age of patients was 12.4 years (median 12, range 4-19 years). The mean age of initial prescription was 8.1 years (median 8, range 3-17 years).

### **Summary of findings (after detailed file review)**

- A comprehensive assessment was conducted by the prescriber (96% of files)
- The patient met DSM-IV criteria for a diagnosis of ADHD (96%)
- Stimulant medication was prescribed according to criteria (95%)
- Absence of exclusionary criteria (89%)
- A face-to-face review had been conducted within the last 12 months (89%)
- A comprehensive review was conducted (84%)
- A multimodal approach to treatment was employed (89%)

### **Initial history and information from other sources**

Details on the presence or absence of the following important assessment components were detailed in the files at the following frequencies:

- History of presenting illness (96% of files)
- Family history of ADHD (71%)
- Evidence of disturbed behaviour at home (97%)
- Disturbed behaviour at school (95%)
- Intellectual / behavioural assessment (90%)
- Observation of behaviour (91%)
- Family and relationship function (83%)
- Educational details (86%)
- Weight (80%)
- Height (70%)
- Physical assessment (72%)

### **Use of DSM-IV Criteria**

Details on the presence of the following DSM-IV criteria were recorded in the files at the following rates:

- DSM-IV criteria use noted (77%)
- Inattention behaviour criteria detailed or scored (94%)
- Hyperactivity behaviour criteria detailed or scored (84%)
- Impulsive behaviour criteria detailed or scored (81%)
- Some hyperactive-impulsive or inattention symptoms that cause impairment were present before age 7 years (86%)
- Some impairment is present in two or more settings (86%)

- Clear evidence of clinically significant impairment in social, academic or occupational functioning (98%)
- Symptoms do not occur exclusively during the course of another disorder (91%)

### **Prescribing criteria (for five most recent medications)**

87% of patients' files met the prescribing criteria of the NSW guidelines in terms of appropriate mg/kg/day dosage. For a further 10% of files this could not be determined as the patient weight was not recorded.

### **Exclusionary criteria (as per NSW Guidelines)**

Rates of patients (prescribed stimulants) who were noted to have exclusionary criteria present were:

- Age less than four (3%)
- DSM-IV criteria not met (2%)
- Significant medication side effects (6%)
- Severe psychiatric comorbidity (13%)
- Severe tic (3%)

### **Details noted at reviews**

The following details were recorded at review sessions:

- Weight (79%)
- Height (68%)
- Assessment of target symptoms (85%)
- Adequacy of dose (83%)
- Continued need for treatment (87%)
- Information from multiple sources (84%)

### **Use of other medications**

- Non-stimulant ADHD treatments (such as atomoxetine) (16%)
- Other psychiatric medications (22%)

### **Use of non-medication therapies (i.e. multimodal therapy)**

- Behavioural therapy (41%)
- Family support (93%)
- Developmental therapy (e.g. speech therapy, occupational therapy) (46%)
- Educational support (85%)

Further to the file review data collected on the audit tool, additional and valuable insights were gained about the management of patients with ADHD that are reflected in the following observations made by one of the expert medical review teams:

*“Clinically the audit showed that there was not inappropriate or casual prescribing for ADHD in these practices. There was nothing to suggest excessive dosages. However, what was clear was that many of the children and families were battling with very complex situations – in the diagnosis of the child, the comorbidities, and the interactions between the parents, siblings and the identified child. For many, the ADHD was a small part of the overall clinical picture but its ramifications were disproportionate — many children had significant learning difficulties, social problems, and other developmental conditions and were living in dysfunctional and sometimes chaotic families, including changes in carers. Several children were being reared by grandparents and a number were in foster homes or experiencing multiple placements. Domestic violence and parental substance abuse were not uncommon.*

*The doctors’ documentation reflected their concerns about such situations and comorbidities. Their determination to help the whole child and family and to enlist additional resources (such as schools in particular, but also speech pathologists, psychologists and occupational therapists) was very apparent. We saw the benefit of the recent Federal Care Plans. The important role of teachers and school counselors - both in providing information and establishing special opportunities for the child - was noted. Doctors working in community health centres had files covering many years and several professionals; the centres also had good contacts with schools. The files were excellent and management multimodal.*

*The prescription of stimulants was cautious. Often parents discontinued medication and the negative results became apparent in school reports or an increase in family problems because of disruptive, disorganised or inattentive behaviour. Medication was quite often appropriately not used on weekends or holidays.*

*The overall impression was of conscientious doctors giving plenty of time trying to offer the best total management in these very complex situations, in spite of their frustration at the lack of additional resources when they felt that the child and family would have benefited from them.”*

## Discussion of File Review Findings

The file review was consistent with the prescriber survey in indicating that diagnostic and prescribing practice followed the NSW Guidelines in the vast majority of cases.

The mean patient age at initial prescription of stimulants was eight years of age.

Most files (84% - 96%) demonstrated: comprehensive assessments; use of DSM-IV diagnostic criteria; prescription of stimulant medication consistent with guidelines; regular and comprehensive reviews; and the use of a broad (multi-modal) treatment approach embracing other management approaches such as behavioural, family or speech therapies. The frequency (around 45%) of the use of developmental and behavioural therapies contrasts with the over 90% who reported in the prescribers' survey that they inform patients of the relevance of these in comprehensive management. This reflects the severe lack of available resources in public and private health services.

The medical reviewer's qualitative assessment of the documentation in the patient files was in line with the quantitative audit findings, confirming that in most cases the treatment was thoughtful and consistent with the best quality practice, despite limited resources.

### **Limitation of file review:**

The final sample of 137 patients was 64% of the projected target. If it had been possible to review the files of the remaining 8 prescribers who agreed to the audit, the final sample would have been 80% of the projected target.



## **Part 3 – Findings: NSW and Commonwealth Prescribing Data**

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### **Method and Results**

#### **Aim**

1. To obtain NSW data on the number of 4-17 year-olds approved for treatment with stimulants for ADHD for the period 1 June 2006 to 31 May 2007.
2. To obtain Commonwealth data on prescriptions for stimulants for 4-17 year-olds for the period 1 June 2006 to 31 May 2007 to determine if the rate of prescription of stimulants for 4-17 year-olds in NSW differs from the overall national Australian figures.

#### **Method**

1. All notified prescriptions recorded in the NSW Pharmaceutical Drugs of Addiction System (PHDAS) were obtained for the period 1 June 2006 to 31 May 2007.
2. Commonwealth prescribing data was obtained by the assistance of staff in the Commonwealth Department of Health and Ageing and with approval of Professor Wayne Hall, Chair of the Drug Utilisation Subcommittee (DUSC) of the Pharmaceutical Benefits Advisory Committee (PBAC). Figures for the period of 1 June 2006 to 31 May 2007 were determined.

The only DUSC data that can be broken down by state or age are those scripts subsidised under Pharmaceutical Benefits Scheme (PBS). This excludes: i) scripts listed under the PBS but not subsidised because the price of the script is less than the General Co-Payment and the patient does not have concessional status; and ii) private scripts.

Age-specific populations were used to calculate DDDs (defined daily doses) per 1,000 population per day. A defined daily dose (DDD) refers to an internationally agreed average therapeutic dose for a particular medication for a specific condition. DDDs/1000 population/day refers to the average number of individuals per thousand population per day on the defined daily dose of a particular medication.

For the 4-17 year-old age group, the denominator national and NSW populations were 3,806,029 and 1,249,304 (ABS figures for 30/6/06). Age was defined as the patient's age as at 31/5/07.

#### **Results**

1. Data from the NSW Pharmaceuticals Services Branch using all notified prescriptions recorded in the Pharmaceutical Drugs of Addiction System (PHDAS) indicated that the number of patients approved for treatment with stimulants for

ADHD for the period 1 June 2006 to 31 May 2007 (aged less than 18 years at the last prescription/authority) was 19,338, i.e. 1.5% of 4-17 year-olds in the State. There were 15,466 males and 3,872 females.

2. As detailed in Table 1, the DDD/1,000/day for dexamphetamine in NSW was 2.011 compared to the national rate of 2.622. The rates for methylphenidate immediate release 10 mg tablets were 2.499 for NSW and 2.082 nationally. Overall stimulant DDDs/1,000/day were 4.931 for NSW and 5.015 nationally, indicating slightly lower prescription rates for NSW compared to the national rates.

## **Discussion of NSW and Commonwealth Prescribing Data**

The NSW data indicated that approximately 1.5% of 4-17 year-olds received approval for treatment for stimulants for ADHD during the period under study. The Commonwealth figures indicated that – in terms of PBS scripts – the equivalent of less than five children per thousand (0.5%) in NSW are receiving stimulant medications on any single day. The difference between the Commonwealth (0.5%) and State (1.5%) figures may be explained by the Commonwealth PBS data not including either private scripts or scripts for which the price was under the General Co-Payment.

Furthermore, the Commonwealth figures indicate that NSW prescribing of stimulants is at the least no more prevalent than that occurring in the rest of the country, and perhaps even less common. When one considers that the prevalence of ADHD in Australia is up to 11% of children and adolescents, it would appear from both NSW and Commonwealth data that prescribing of stimulants for ADHD in NSW is cautious and conservative.

### **Limitations of prescribing data:**

With regard to the Commonwealth data, only figures for scripts subsidised under the PBS scheme are able to be broken down by age and state. This means that the figures will be an under-estimate of the actual overall stimulant prescription rates as the figures do not include private scripts or scripts for which the price was under the General Co-Payment. A number of patients would have been on private scripts for long-acting methylphenidate during this period. However, this would be not be likely to have affected the relative comparisons between states.



**Table 1: PBS & RPBS scripts for ADHD drugs for patients aged 4 to 17 years – date of supply from June 2006 to May 2007 inclusive**

Pharmacy State	Drug name	Item code	Form & Strength	Age Range		DDD's per 1000 population* per day
				Scripts	Patients	
ALL	DEXAMPHETAMINE SULPHATE	1165	Tablet 5mg	88,599	16,647	2.622
	METHYLPHENIDATE	2387	Tablet C R 18mg 30	2,509	1,976	0.033
		2388	Tablet C R 36mg 30	5,578	4,135	0.145
		2432	Tablet C R 54mg 30	3,444	2,500	0.134
		8839	Tablet 10mg 100	74,810	17,801	2.082
ALL Total	ALL Total:			174,940		5.015
NSW	DEXAMPHETAMINE SULPHATE	1165	Tablet 5mg	22,865	4,696	2.011
	METHYLPHENIDATE	2387	Tablet C R 18mg 30	1,033	834	0.041
		2388	Tablet C R 36mg 30	2,476	1,877	0.197
		2432	Tablet C R 54mg 30	1,542	1,156	0.182
		8839	Tablet 10mg 100	29,705	7,549	2.499
NSW Total	NSW Total:			57,621		4.931

**Notes:**

- Population\*: Age group specific population is used to calculate the DDDs per population per day (i.e. National 4-17yrs = 3,806,029, NSW 4-17yrs = 1,249,304 as at 30 June 2006). Sourced from ABS publication #3201.0 Population by Age, Sex, Australian States and Territories, Tables 1 & 9 , released 13/12/2006
- Patients: Patient counts cannot be summed across item codes as this would result in double counting. That is, the same patient may have multiple items.
- ADHD drugs: ADHD drugs are defined as all drugs with ATC Level 5 = N06BA02 (Dexamphetamine) or N06BA04 (Methylphenidate) or N06BA09 (Atomoxetine)
- Item codes: Items 2387, 2388 & 2432 were first listed on the PBS in April 2007, so the PBS & RPBS data is only for part of the year
- State: State is defined as pharmacy state to be consistent with previously supplied data. However this means that the NSW patient count includes all patients who filled scripts at NSW pharmacies, not necessarily NSW residents.
- Age range: Age is defined as the patient's age as at the 31 May 2007 (i.e. the end of the period). This is the preferred method of calculating age when counting patient in age groups, as it avoids the problem of a patients being count in 2 separate age groups because they change age during the year. This is not a problem with this analysis because there is only one age group, but age is still calculated as at the end of the period.
- Source: Processed line by line data - date of processing from June 2006 to September 2007 inclusive
- Exclusions: Only those scripts that can be classified by age are included in the above table. In total there are 272,808 PBS & RPBS scripts for the above items (previously reported), of which 3,160 (1.2%) cannot be classified by age, either because the patient is not identified (2,995 scripts) or the identified patient has an invalid date or birth or age (165 scripts). Thus you may choose to inflate the figures by 1.2% to compensate for this missing data.



## **Members of the Special Review Committee**

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### **Notes:**

- ❖ See Appendix I for potential conflict of interest statements for members of the special review committee and the medical clinical file reviewers
- ❖ With the exceptions of Professors Mitchell and Hughes, all of the Special Review Committee comprise past and present members of the NSW Stimulant Subcommittee.

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- Dr Brian Kearney
- Alexandra Warner
- Bernadette King

## **NSW Pharmaceutical Services Branch**

- Pia Salmelainen
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## **Administrative Support – CEC**

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- Joanna Sut
- Patricia Beron

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## **Abbreviations and Glossary of Terms**

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### **Abbreviations:**

ADHD	Attention Deficit Hyperactivity Disorder
CEC	Clinical Excellence Commission
DDD	Defined Daily Dose
DEX	Dexamphetamine
DSM-IV	Diagnostic and Statistical Manual of Mental Disorders
ICD-10	International Classification of Diseases
MPH	Methylphenidate
MTA	Multimodal Treatment Study
NIMH	National Institute of Mental Health
PHDAS	Pharmaceutical Drugs of Addiction System
PSB	Pharmaceutical Services Branch
RPBS	Repatriation Pharmaceutical Benefits Scheme
SAS	Statistical Analysis System

### **Glossary:**

Autism	Autism is a brain development disorder that impairs social interaction and communication, and causes restricted and repetitive behaviour, all starting before a child is three years old.
Comorbid	Comorbid pertains to a disease or other pathological process that occurs simultaneously with another.
Conduct Disorder	A behavioural condition involving a pattern of repetitive and persistent conduct that infringes on the basic rights of others or does not conform to established societal norms or rules that are appropriate for a child of that age.

DSM-IV	<p>The Diagnostic and Statistical Manual of Mental Disorders (DSM) is an American handbook for mental health professionals that list difference categories of mental disorders and the criteria for diagnosing them, according to the publishing organisation the American Psychiatric Association. It is used worldwide by clinicians and researchers as well as insurance companies, pharmaceutical companies and policy makers.</p> <p>There are five revisions of the DSM since it was first published in 1952. The last major revision was the DSM-IV published in 1994.</p>
Executive function	<p>The term “executive function” describes a set of cognitive abilities that control and regulate other abilities and behaviours. Executive functions are necessary for goal-directed behaviour. They include the ability to initiate and stop actions, to monitor and change behaviour as needed, and to plan future behaviour when faced with novel tasks and situations. Executive functions allow us to anticipate outcomes and adapt to changing situations. The ability to form concepts and think abstractly are often considered components of executive function.</p>
Extant	<p>Still in existence</p>
ICD-10	<p>The International Classification of Diseases (ICD) has become the international standard diagnostic classification for all general epidemiological and many health management purposes. These include the analysis of the general health situation of population groups and monitoring of the incidence and prevalence of diseases and other health problems in relation to other variables such as the characteristics and circumstances of the individual affected.</p>
Meta-regression	<p>Meta-regression analysis examines the relationship between one or more study-level characteristics and the sizes of effect observed in the studies. Characteristics of studies might be, for example, aspects of the interventions, the settings or the designs (such as geographical location, dose of a drug, or length of treatment). The sizes of effects are the usual measures available for a meta-analysis, such as odds ratios or differences in means.</p>
Multimodal treatment	<p>Therapy that combines more than one method of treatment</p>
Neurocognitive	<p>Having to do with the ability to think and reason. This includes the ability to concentrate, process information, learn, speak and understand.</p>
Oppositional Defiant Disorder	<p>A recurrent pattern of negativistic, defiant, disobedient and hostile behaviour toward authority figures that persists for at least six months.</p>

Psychometric test	Any standardised procedure for measuring sensitivity or memory or intelligence or aptitude or personality etc; "the test was standardised on a large sample of students".
Psycho-stimulant	Drugs that abnormally speed up the function of the brain and body.
Tics	A habitual spasmodic muscular movement or contraction, usually of the face or extremities.



## Appendices

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- Appendix A: Explanatory letter to all prescribers
- Appendix B: Prescriber Survey Instrument
- Appendix C: Authorisation by Director-General under Section 71 of the Public Health Act 1991
- Appendix D: Extension of the Certificate of Authority to 21 December 2007
- Appendix E: Extension of the Terms of Reference to 31 January 2008
- Appendix F: Letter to Prescribers concerning file review
- Appendix G: Letter from RANZCP endorsing audit
- Appendix H: Documentation Audit Tool
- Appendix I: Potential Conflict of Interest statements for each member of Review Committee and file reviewers

## Appendix A: Explanatory letter to all prescribers

Dear Doctor

**Re: Special Review ADHD**

### Background

You may have seen the media attention relating to Judge Paul Conlon's comments about ADHD and young offenders in the Daily Telegraph in April 2007. In May 2007 the Minister for Health requested that the NSW Department of Health initiate a special review into the Judge's claims.

The Clinical Excellence Commission (CEC) has been commissioned to conduct the review and has convened a Review Committee of which I am the Chairperson. The CEC is a statutory health corporation established under the Health Services Act 1997 and reports to the Minister. The role of the CEC is to identify issues of a systemic nature that affect patient safety and clinical quality in the NSW health system and develop and advise on improvement strategies to address these issues.

### Focus of the review

The focus of the review will be on whether clinical practice for the assessment and management of ADHD is in accordance with evidence based guidelines. In the absence of the NHMRC Guideline which was rescinded in December 2005, the benchmark standard will be the NSW Health Criteria for the Diagnosis and Management of Attention Deficit Hyperactivity Disorder in Children and Adolescents Version 6 June 2004. The Criteria was updated by the NSW Health Stimulant Sub-Committee in May 2007 and a copy of the updated Criteria was sent out to prescribing practitioners. Should you require a copy please contact Kanan Gandechea at the Pharmaceutical Services Branch on (02) 9879 3214.

### Review format

The review will be in two parts – part one is a self-report survey which focuses on prescriber details, and diagnostic and treatment practices. Part two involves a clinical file audit to assess current prescribing practices against the NSW Health Criteria for the Diagnosis and Management of ADHD in Children and Adolescents version 6 June 2004.

### Survey

The survey is enclosed and has been distributed to all practitioners who prescribed stimulant medication to children and adolescents for the period 1 June 2006 to 31 May 2007. I would be most grateful for your participation in the survey.

### File audit

The necessary legal framework and authority to conduct the file audit is being finalised and I expect this to occur within the next week or so.

Enquiries in the first instance should be directed to Ms Alex Warner, Manager Special Reviews CEC on 9382 7658, mobile 0415 626 770, or email alexandra.warner@cec.health.nsw.gov.au

Yours sincerely



Professor Philip Mitchell  
Chair, NSW Special Review Committee on ADHD in Children and Adolescents

# Appendix B: Prescriber Survey Instrument

## SURVEY OF DIAGNOSIS AND TREATMENT OF ADHD IN CHILDREN AND ADOLESCENTS

This survey is being conducted as part of the NSW Health special review on the diagnosis and treatment of ADHD in children and adolescents. The survey takes about 10 minutes to complete and your participation is very much appreciated.

Please mark your responses in the boxes provided. Send completed surveys in reply paid envelope provided or via fax to (02) 9382 7615 by the end of September 2007.

Enquiries about the survey should be directed to Alex Warner, telephone no. 9382 7658 or email at [Alexandra.warner@cec.health.nsw.gov.au](mailto:Alexandra.warner@cec.health.nsw.gov.au)

### ID No:

### Prescriber Details

- Q1. Age:   yrs
- Q2. Sex  male  female
- Q3. Which of the following best describes you?
- Paediatrician
  - paediatric registrar
  - child psychiatrist
  - adult psychiatrist
  - psychiatric registrar
  - Neurologist
  - other, specify .....
- Q4. What year did you receive your specialist qualifications? If not applicable write XXXX
- |                      |                      |                      |                      |
|----------------------|----------------------|----------------------|----------------------|
| <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
|----------------------|----------------------|----------------------|----------------------|

### Practice Details

- Q5. Which of the following best describes your practice? If applicable, indicate your main practice and your secondary practice.
- | Main                     | Secondary                                                      |
|--------------------------|----------------------------------------------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> private                               |
| <input type="checkbox"/> | <input type="checkbox"/> private with public hospital sessions |
| <input type="checkbox"/> | <input type="checkbox"/> public hospital, on-site full-time    |
| <input type="checkbox"/> | <input type="checkbox"/> university / academic                 |
| <input type="checkbox"/> | <input type="checkbox"/> community centre                      |
| <input type="checkbox"/> | <input type="checkbox"/> other, specify .....                  |
- Q6. Where is your practice located? If more than one location, indicate the location of your main practice.
- Sydney metropolitan
  - Other metropolitan (eg Newcastle, Wollongong)
  - Rural

- Q7. On average, how many patients do you see per month? Include patients at all practice locations if applicable.
- |                                    |                                    |
|------------------------------------|------------------------------------|
| <input type="checkbox"/> 0 - 100   | <input type="checkbox"/> 201 - 400 |
| <input type="checkbox"/> 101 - 200 | <input type="checkbox"/> over 400  |

**NOTE: remaining questions relate to patients less than 18 years of age.**

- Q8. How many years experience do you have in assessing and treating patients with ADHD? Include experience acquired during training
- |                      |                      |
|----------------------|----------------------|
| <input type="text"/> | <input type="text"/> |
|----------------------|----------------------|
- Years
- Q9. What proportion of your patients have ADHD?
- |                                        |                                        |
|----------------------------------------|----------------------------------------|
| <input type="checkbox"/> less than 10% | <input type="checkbox"/> 51% to 90%    |
| <input type="checkbox"/> 10% to 50%    | <input type="checkbox"/> more than 90% |
- Q10. On average, how many patients do you diagnose with ADHD (who have not previously been diagnosed)? Include all practice locations if applicable.
- ..... number per day
- OR ..... number per week
- OR ..... number per month
- OR ..... number per year
- less than 1 a year (i.e. one every few years)
- OR
- none
- Q11. On average, how many patients do you see that you have previously diagnosed with ADHD? Include all practice locations if applicable.
- ..... number per day
- OR ..... number per week
- OR ..... number per month
- OR ..... number per year
- less than 1 a year (i.e. one every few years)
- OR
- none

## Diagnosis

- Q12. For each of the following, indicate the extent to which they are utilised in your diagnostic procedures for ADHD?**  
 1 = Always                      3 = Occasionally  
 2 = Usually                     4 = Rarely / Never
- | 1                        | 2                        | 3                        | 4                        |                                                                                                      |
|--------------------------|--------------------------|--------------------------|--------------------------|------------------------------------------------------------------------------------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | interview with the patient                                                                           |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | interview with the patient's parent(s) / caregivers(s)                                               |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | behaviour rating scale / questionnaire completed by parent / caregiver                               |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | school or teacher report, eg report on behaviour, academic achievement                               |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | behaviour rating scale / questionnaire completed by teacher                                          |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | direct observation of the patient outside the office setting                                         |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | psychometric testing, eg assessment of verbal / non-verbal abilities, reading achievement, intellect |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | physical examination                                                                                 |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | electroencephalogram (EEG)                                                                           |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | assessment for possible alternate diagnosis, eg psychosis, anti-social disorder, anxiety             |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | assessment of patient's development milestones                                                       |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | assessment of patient's vision and / or hearing                                                      |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | family history, eg history of ADHD, psychiatric illness                                              |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | family functioning, eg communication patterns, parental management styles, marital conflict, stress  |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | continuous performance test, eg Conners' CPT, TOVA                                                   |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | DSM-IV / ICD-10 criteria for ADHD                                                                    |

- Q13. Indicate your level of agreement or disagreement with the following statements:**  
 "In order to make a diagnosis of ADHD it is necessary that the symptoms ....."  
 1 = Strongly Always            4 = Somewhat Disagree  
 2 = Somewhat Agree         5 = Strongly Disagree  
 3 = Neither Agree nor Disagree
- | 1                        | 2                        | 3                        | 4                        | 5                        |                                                                                                   |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|---------------------------------------------------------------------------------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | ... are present across different settings, eg home and classroom                                  |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | ... result in significant impairment in social, academic or occupational functioning      Cont... |

- | Cont | 1                        | 2                        | 3                        | 4                        | 5                        |                                                                      |
|------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|----------------------------------------------------------------------|
|      | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | ... are present for at least six months                              |
|      | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | ... began before seven years of age                                  |
|      | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | ... are not better explained by another disorder, eg anxiety, autism |

## Treatment

- Q14. How often do you provide the following information to a patient you diagnosis with ADHD and / or the patient's family?**  
 1 = Always                      3 = Occasionally  
 2 = Usually                     4 = Rarely / Never
- | 1                        | 2                        | 3                        | 4                        |                                                                                          |
|--------------------------|--------------------------|--------------------------|--------------------------|------------------------------------------------------------------------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | general information about ADHD, including expected course of the disorder and prognosis  |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | useful resources on ADHD, eg books, local support services, internet sites               |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | risks / benefits associated with stimulant treatment                                     |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | risks / benefits associated with using medication other than stimulants                  |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | risks / benefits associated with using non-medication behaviour management interventions |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Other treatments, eg DORE                                                                |
- Q15. What elements are routinely included in your management of ADHD? (Tick one or more boxes.)**
- treatment objectives and measures of outcome, eg increase in attention, increase in compliance with instructions, decrease in disruptive behaviours, improvements in relationships, increased independence in self-care
  - duration of treatment
  - system of communication with the patient, his or her parents / caregivers, teachers and other treating professionals between office visits
  - monitoring of compliance with the treatment
  - monitoring and recording of the incidence of adverse effects of treatment
  - monitoring of the effectiveness of treatment
  - updating and monitoring of family knowledge and understanding of ADHD on a periodic basis
  - consideration of alternative treatments

**Q16. When you prescribe stimulant medication for ADHD, how often do you inform the patient and / or the patient's family of the following?**

1 = Always                      3 = Occasionally  
2 = Usually                    4 = Rarely / Never

- | 1                        | 2                        | 3                        | 4                        |                                                                            |
|--------------------------|--------------------------|--------------------------|--------------------------|----------------------------------------------------------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | risks / benefits associated with using stimulant medication                |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | changes to expect when using stimulant medication                          |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | the dosage and administration schedule                                     |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | the importance of complying with the dosing schedule                       |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | possible adverse effects                                                   |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | the significance of possible adverse effects                               |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | current consumer medicine information on methylphenidate or dexamphetamine |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | what to do if concerned that something is wrong with the treatment         |

**Q17. When you prescribe stimulant medication for ADHD, how often do you inform the patient and / or the patient's family of the following?**

1 = Always                      3 = Occasionally  
2 = Usually                    4 = Rarely / Never

- | 1                        | 2                        | 3                        | 4                        |                                                                                                    |
|--------------------------|--------------------------|--------------------------|--------------------------|----------------------------------------------------------------------------------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | relevant developmental therapy, eg speech therapy, language therapy                                |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | basic behaviour management techniques in the home, eg timeout, contingent attention, point systems |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | basic behaviour management techniques in the school eg classroom behaviour management              |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | trial of non-stimulant medication                                                                  |

**Q18. What is the youngest age that you would consider using stimulants to treat ADHD?**

		years
--	--	-------

**Q19. What proportion of patients that you have diagnosed with ADHD have stimulants prescribed as the first line of treatment?**

- |                                        |                                        |
|----------------------------------------|----------------------------------------|
| <input type="checkbox"/> less than 50% | <input type="checkbox"/> 76 to 85%     |
| <input type="checkbox"/> 51 to 75%     | <input type="checkbox"/> more than 85% |

**Q20. When commencing a patient on stimulant medication, how often are you in contact (phone or face to face) with the patient and / or the patient's parent(s) / caregiver (s) during the first three months of treatment?**

- daily
- more than once a week but not daily
- about once a week
- about once a fortnight
- about once a month
- once or twice

**Q21. For review purposes, how often do you schedule appointments for patients who have been stabilised on stimulant medication?**

- monthly or more frequently
- once every 2 to 3 months
- once every 4 to 6 months
- once every 7 to 12 months
- more than 12 months

**Q22. When conducting a routine review of a patient stabilised on stimulant medication, which of the following do you normally assess? (Tick one or more boxes.)**

- weight
- height
- blood pressure
- the incidence and severity of adverse effects
- compliance with the dosing and administration schedule
- the effect of treatment on the family's functioning
- the need for continuing medication
- target symptoms of ADHD
- academic progress
- school behaviour
- social relationship
- functioning in the family

**Q23. How often do you use the following methods for monitoring the effectiveness of stimulant medication?**

1 = Always                      3 = Occasionally  
2 = Usually                    4 = Rarely / Never

- | 1                        | 2                        | 3                        | 4                        |                                                                       |
|--------------------------|--------------------------|--------------------------|--------------------------|-----------------------------------------------------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | interview with the patient                                            |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | interview with the patient's parent(s) / caregivers(s)                |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | daily diary on target symptoms maintained by parent(s) / caregiver(s) |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | behaviour rating scale completed by teacher(s)                        |

Cont...

- Cont 1 2 3 4
- teacher reports, eg report cards, checklists, personal contact
  - reports from other treating professionals, eg speech pathologist, psychologist
  - reports from other significant adults (not parents / caregivers, treating professionals or teachers)
  - drug holidays or medication-free periods
  - psychometric treating, eg tests of verbal / non-verbal ability
  - direct observation of the child outside the office setting
  - continuous performance testing, eg Conners' CPT, TOVA

**Q24. How often do you prescribe the following psychotropic medication in combination with stimulant medication, for the treatment of ADHD?**

- 1 = every patient with ADHD
- 2 = few patients with ADHD
- 3 = most patients with ADHD
- 4 = only patients with complications
- 5 = never

- 1 2 3 4 5
- Clonidine
- tricyclic antidepressants
- SSRIs
- other antidepressants, eg moclobemide
- antiepileptics
- atypical antipsychotics, eg risperidone
- conventional or traditional antipsychotics

**Q25. In the past 12 months, approximately what % of patients for whom you have prescribed stimulant medication have you observed to develop significant adverse effects that has led to ceasing or changing the medication? (E.g. major mood changes, tics, growth retardation.)**

- 0 - 5%                       16% to 20%
- 6% to 10%                  over 20%
- 11% to 15%

**Q26. In what proportion of patients have you observed stimulant medication to significantly improve symptoms of ADHD?**

- less than 50%                 76% to 85%
- 51% to 75%                  more than 85%

**Q27. What do you perceive are the gaps in providing good quality ADHD services**

- Education
  - Behavioural Therapy
  - Family Therapy
  - Psychometric Evaluation
  - Dietary Intervention
  - Other, please specify
- .....
- .....

**Q28. Are you familiar with the NSW Health Criteria for the Diagnosis and Management of Attention Deficit Disorder in Children and Adolescents?**

**Version TG 181/7 May 2007**

- Yes
- No

**Version TG 181/6 June 2004**

- Yes
- No

**Q29. Do you have any further comments?**

.....

.....

.....

.....

**Thank you for completing this survey**

Please place survey in reply paid envelope provided and send to the CEC or fax to (02) 9382 7615 by the end of **September 2007**.

Any enquiries about the survey should be directed to Alex Warner, telephone no. 9382 7658 or email at [Alexandra.warner@cec.health.nsw.gov.au](mailto:Alexandra.warner@cec.health.nsw.gov.au)

# Appendix C: Authorisation by Director-General under Section 71 of the Public Health Act 1991

## PUBLIC HEALTH ACT 1991

### SECTION 71 (1)

#### INQUIRY INTO A MATTER AFFECTING THE HEALTH OF THE PUBLIC

I, DEBORA PICONE, Director-General of the New South Wales Department of Health do hereby initiate an inquiry under section 71(1) of the Public Health Act 1991 into the public health issues arising from the assessment and treatment of Attention Deficit Hyperactivity Disorder (ADHD) and the prescription of drugs associated with that treatment regime.

The Inquiry is to:

- (i) Assess current practice in the assessment and treatment of ADHD;
- (ii) Advise on the development of clinical guidelines in Australia for the assessment and treatment of ADHD and on treatment of ADHD via the prescription of the stimulant medications dexamphetamine and methylphenidate; and,
- (iii) Undertake a clinical audit of a cross section of medical practitioners approved under section 29 of the Poisons and Therapeutic Goods Act 1966 to prescribe stimulant medication for ADHD to assess whether current practice complies with the requirements of the Poisons and Therapeutic Goods Act 1966 and its regulations which are referenced in the NSW Health Criteria for the Diagnosis and Management of Attention Deficit Hyperactivity Disorder in Children and Adolescents, Version 6 June 2004.

The focus of the Inquiry is on children and adolescents less than 18 years of age, but may also consider the impact of treatment and prescribing practices on adults.

A Final Report of the Review is to be provided to the Minister for Health by 30 November 2007

The Inquiry will be conducted through a Special Review Committee formed by the Clinical Excellence Commission

Signed this

13<sup>th</sup>

day of SEPTEMBER 2007.



Debora Picone  
Director-General,  
NSW Department of Health

# Appendix D: Extension of the Certificate of Authority to 21 December 2007

**PUBLIC HEALTH ACT 1991**  
**CERTIFICATE OF AUTHORITY**  
**Section 71**


Alexandra Warner whose signature appears below, is hereby authorised under section 71 of the Public Health Act 1991 to enter any premises at which medical services are provided for the assessment and treatment of Attention Deficit Hyperactivity Disorder (ADHD), including the prescription of drugs associated with that treatment regime AND to:

- (a) require the occupier of those premises to make available for inspection any records that are in the possession, or under the control, of the occupier and relate to a matter in respect of which an inquiry is authorised by this Certificate; and
- (b) inspect any records that are on those premises and which relate to such a matter.

The inspection authorised by this certificate is for the purpose of carrying out an inquiry commenced under section 71 of the Public Health Act by the Director-General, NSW Department of Health as set out in the Terms of reference attached as the Schedule to this Certificate. This purpose is a matter relating to the health of the public.

This certificate of authority shall remain valid from date of signature until 21 December 2007.

Signed this *30th* day of *NOVEMBER* 2007

  
.....  
Debora Picone  
Director-General,  
NSW Department of Health

  
.....  
(Signature of authorised person)

# Appendix E: Extension of the Terms of Reference to 31 January 2008

## PUBLIC HEALTH ACT 1991

### SECTION 71 (1)


#### INQUIRY INTO A MATTER AFFECTING THE HEALTH OF THE PUBLIC

I, DEBORA PICONE, Director-General of the New South Wales Department of Health do hereby EXTEND the inquiry under section 71(1) of the Public Health Act 1991 into the public health issues arising from the assessment and treatment of Attention Deficit Hyperactivity Disorder (ADHD) and the prescription of drugs associated with that treatment regime, as outlined in Annexure A to this document, to provide as follows:

A Final Report of the Review is to be provided to the Minister for Health by 31 January 2008

Signed this

*30th* day of *NOVEMBER* 2007.

  
Debora Picone  
Director-General,  
NSW Department of Health

## Appendix F: Letter to Prescribers concerning file review

10 October 2007

Dear Dr

### Re: ADHD Special Review: file audit

Thank you for returning the ADHD survey. The data will be analysed towards the end of October and incorporated in the final report which is due for completion at the end of November 2007.

As indicated in my letter that accompanied the survey, part two of the review involves a clinical file audit to assess current prescribing practices against the NSW Health Criteria for the Diagnosis and Management of ADHD in Children and Adolescents.

The sample population of stimulant prescribers has been stratified and a random allocation of prescribers from this sample has selected patients from your practice to be included in the audit. The files will be audited at a site and time convenient to your practice arrangements and the audit team will sample no more than five patients per prescriber. The audit team consists of a medical specialist with extensive experience in treating patients with ADHD and a Registered Nurse with experience in conducting file audits. The audit data will be coded and deidentified at the time of collection.

The NSW Health Director General has authorised the file audit which provides legal protection to medical specialists for them to give access to medical records. However, this authorisation does not require you by law to provide access to patient records and your agreement to participate in the audit is sought before progressing further. Accordingly, I have attached a form for you to indicate your preference. The Minister has given the Review Committee a very tight timeframe to complete the audit and your timely attention to this request will be most helpful.

Enquiries in the first instance should be directed to Ms Alex Warner, Manager Special Reviews CEC on 9282 7658.

Yours sincerely



Professor Philip Mitchell  
Chair, NSW Special Review Committee on ADHD in Children and Adolescents

## Appendix G: Letter from RANZCP endorsing audit



THE ROYAL  
AUSTRALIAN AND NEW ZEALAND  
COLLEGE OF PSYCHIATRISTS

ACN68 000 439 047

**NEW SOUTH WALES BRANCH**

13 November, 2007

Prof Phillip Mitchell  
Chair  
NSW Special Review Committee on ADHD  
In Children & Adolescents  
Clinical Excellence Commission  
GPO Box 1614  
**SYDNEY NSW 2001**

Dear Phillip

### **Re: ADHD Special Review**

Thank you for the information contained in your recent letter outlining the ADHD Special Review commissioned by the Minister for Health and conducted by the Clinical Excellence Commission.

The NSW Branch Committee of the College has noted that the focus of the review will be on whether clinical practice for the assessment and management of ADHD is in accordance with evidence based guidelines, and that, as part of the process, you will be conducting a survey of psychiatrists within the State. I have been asked to convey to you that the RANZCP NSW Committee fully supports this Review, and would encourage College Fellows to assist by participating in the survey process in order to obtain the clearest possible outcome.

The outcome of the Review will be of interest to the College and its Fellows, and we look forward to hearing from you again upon its completion.

Yours sincerely,

Dr Adrian Keller  
Chair,  
**RANZCP NSW Branch**

# Appendix H: Documentation Audit Tool

## SPECIAL REVIEW ADHD DOCUMENTATION AUDIT TOOL CONFIDENTIAL

Study No:

Medical Record adequate to support audit:   
(Yes / No then STOP and give reason)

Reason: ..... Medical Review ID:

Date of audit:: 

D	D
---	---

M	M
---	---

Y	Y
---	---

 Nurse Review ID:

### Demographic Data (From PSB database)

Patient ID no:

Patient's residential postcode:

Sex (1 = male, 2 = female)

Date of birth: 

D	D
---	---

M	M
---	---

Y	Y
---	---

Age at initial prescription 

Y	Y
---	---

M	M
---	---

Postcode where patient seen (Nurse Review)

### Criterion 1 (Medical review): INITIAL HISTORY and INFORMATION FROM OTHER SOURCES

(Yes / No / Not recorded)

Yes	No	NR		Yes	No	NR	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1.1 History of presenting illness	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1.7 Family and relationship function
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1.2 Family history of ADHD	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1.8 Educational
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1.3 Disturbed behaviour at home	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1.9 Weight
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1.4 Disturbed behaviour at school	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1.10 Height
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1.5 Intellectual / developmental assessment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1.11 Physical assessment
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1.6 Observation of behaviour				

Comments:

.....  
.....

**Criterion 2 (Medical review): USE OF DSM-IV CRITERIA**

Yes No

- 2.1 Use of DSM-IV criteria is noted
- 2.2 Detail or score INATTENTION behaviour criteria
- 2.3a Detail or score HYPERACTIVE behaviour criteria
- 2.3b Detail or score IMPLUSIVE behaviour criteria
- 2.4 Some hyperactive-impulsive or inattentive symptoms that cause impairment were present before age 7 years.
- 2.5 Some impairment from the symptoms is present in two or more settings e.g. at school, work, and at home.
- 2.6 There is clear evidence of clinically significant impairment in social, academic, or occupational functioning.
- 2.7 The symptoms do not occur exclusively during the course of a Pervasive Development Disorder, Schizophrenia, or other Psychotic Disorder and are not better accounted for by a mental disorder e.g. Mood Disorder, Anxiety Disorder, Dissociative Disorder, or Personality Disorder.

Comments:

.....  
 .....

**Criterion 3 (Nurse review): STIMULANT MEDICATION HISTORY - 5 most recent prescriptions**

Date	Medication Type/s	Weight	Daily Dose/ No. of tablets	AFTER AUDIT	Calculation (to be done after the audit)	Meets Prescribing Criteria 1=Yes, 2=No, (to be done after the audit)
...../...../.....	1. .... 2. .... 3. ....		1. .... 2. .... 3. ....	AFTER AUDIT		
...../...../.....	1. .... 2. .... 3. ....		1. .... 2. .... 3. ....	AFTER AUDIT		
...../...../.....	1. .... 2. .... 3. ....		1. .... 2. .... 3. ....	AFTER AUDIT		
...../...../.....	1. .... 2. .... 3. ....		1. .... 2. .... 3. ....	AFTER AUDIT		
...../...../.....	1. .... 2. .... 3. ....		1. .... 2. .... 3. ....	AFTER AUDIT		

Comments:

.....  
 .....

**Criterion 4** (4.1 & 4.2 Nurse review, 4.3-4.6 Medical review): **EXCLUSIONARY CRITERIA**

Criteria	Yes	No	Comments
4.1 Age is under 4 years	<input type="checkbox"/>	<input type="checkbox"/>	.....
4.2 The DSM-IV criteria for ADHD are not fulfilled	<input type="checkbox"/>	<input type="checkbox"/>	.....
4.4 There are significant side effects	<input type="checkbox"/>	<input type="checkbox"/>	.....
4.5 There is severe psychiatric comorbidity	<input type="checkbox"/>	<input type="checkbox"/>	.....
4.6 There exists a severe tic causing significant impairment and distress or requiring treatment in its own right	<input type="checkbox"/>	<input type="checkbox"/>	.....

**Criterion 5** (Nurse review): **DATE OF MOST RECENT FACE-TO-FACE REVIEW**

D D	M M	Y Y
-----	-----	-----

**Criterion 6** (6.1 & 6.2 Nurse review, 6.3-6.6 Medical review): **WHAT WAS REVIEWED & DOCUMENTED?**

Criteria	Yes	No
6.1 Weight recorded	<input type="checkbox"/>	<input type="checkbox"/>
6.2 Height recorded	<input type="checkbox"/>	<input type="checkbox"/>
6.3 Assessment of target symptoms	<input type="checkbox"/>	<input type="checkbox"/>
6.4 Adequacy of current dose	<input type="checkbox"/>	<input type="checkbox"/>
6.5 Continued need for medication	<input type="checkbox"/>	<input type="checkbox"/>
6.6 Information from multiple sources (i.e. parents, teachers, other significant caregivers)	<input type="checkbox"/>	<input type="checkbox"/>

**Criterion 7** (Nurse review): **FREQUENCY OF REVIEW?**

Duration between most recent face-to-face review and second most recent face-to-face review:

..... Weeks

**OR**

..... Months

**OR**

..... Years

**Criterion 8 (Nurse review): OTHER MEDICATION**

	Criteria	Yes	No	Medications
8.1	Non-stimulant medication prescribed for ADHD e.g. Strattera and Clonidine	<input type="checkbox"/>	<input type="checkbox"/>	.....
8.2	Other psychiatric medications prescribed (e.g. antidepressants, antipsychotics)	<input type="checkbox"/>	<input type="checkbox"/>	.....

**Criterion 9 (Medical review): MULTIMODAL THERAPY**

	Criteria	Yes	No
9.1	Behavioural Therapy	<input type="checkbox"/>	<input type="checkbox"/>
9.2	Family Support	<input type="checkbox"/>	<input type="checkbox"/>
9.3	Development therapy e.g. speech pathology, occupational therapy	<input type="checkbox"/>	<input type="checkbox"/>
9.4	Educational support	<input type="checkbox"/>	<input type="checkbox"/>
9.5	Other (list):		
	1. ....		
	2. ....		
	3. ....		
	4. ....		
	5. ....		

Comments:

.....

.....

.....

**Summary (Medical review)**

There was sufficient documentary evidence to indicate:

	Criteria	Yes	No
1.	A comprehensive assessment was conducted	<input type="checkbox"/>	<input type="checkbox"/>
2.	The patient met the DSM-IV criteria for a diagnosis of ADHD	<input type="checkbox"/>	<input type="checkbox"/>
3.	Simulant medication was prescribed according to the criteria	<input type="checkbox"/>	<input type="checkbox"/>
4.	The absence of exclusionary criteria	<input type="checkbox"/>	<input type="checkbox"/>
5.	A face-to-face review had been conducted within the last 12 months	<input type="checkbox"/>	<input type="checkbox"/>
6.	A comprehensive review was conducted	<input type="checkbox"/>	<input type="checkbox"/>
7.	A multimodal approach to treatment	<input type="checkbox"/>	<input type="checkbox"/>

## Appendix I: Potential Conflict of Interest statements for each member of Review Committee and file reviewers

Review Committee members and the file reviewers (doctors only) were asked to formally notify the Clinical Excellence Commission of any activities and appointments which may lead to a potential or actual conflict of interest as a member of the ADHD Review Committee.

- Professor Philip Mitchell      I do not perceive of any actual conflict of interest.
- In the last 5 years I have served on an advisory board for Eli Lilly for Bipolar Disorder (one national and one international) and AstraZeneca for Bipolar Disorder.
- I have received remuneration from the following companies for lectures or consultancies: Janssen-Cilag; Eli Lilly; Lunbeck; Astra Zeneca; and GSK.
- Dr Simon Clarke      I do not perceive of any actual conflict of interest.
- My other roles are:
- Medical Director Adolescent Medical Unit Westmead Hospital
  - Sydney West Area Health Service Director Adolescent Unit.
- Dr Patrick Concannon      I do not perceive of any actual conflict of interest.
- My other roles are:
- Chairperson, NSW Stimulant Subcommittee
  - Service Director, Royal North Shore & Ryde Child and family Health Service
  - Senior staff specialist, Dept. of Paediatrics, Royal North Shore Hospital
  - Consultant Developmental paediatrician in part-time private practice
  - I have served on advisory committees for Novartis and Janssen-Cilag.
- Dr Paul Hutchins      I do not perceive of any actual conflict of interest.
- My other roles are:
- Senior staff specialist, Child Development Unit, The Children's Hospital at West mead
  - Senior paediatric consultant, The Children's Hospital Education Research Institute
  - Head of Dept. Child Development Unit
- I have served on advisory panels for Eli Lilly, Janssen-Cilag, and Novartis.

- Professor Florence Levy I do not perceive of any actual conflict of interest.
- My other roles are:
- Senior Staff Specialist at Prince of Wales Hospital
  - Conjoint Professor at the University of NSW.
- Dr Des Mulcahy I do not perceive of any actual conflict of interest.
- My other roles are:
- Prescriber of stimulant medication
  - Member of the Stimulant Subcommittee.
- Dr Jim Friend I do not perceive of any actual conflict of interest.
- My other roles are:
- Staff specialist psychiatrist with Northern Beaches Adolescent Service 16 hours per week
  - Staff specialist psychiatrist with Ryde Child and Adolescent Mental Health Service 4 hours per week
  - Private practice 3 days per week at Westmead. I am about to retire from private practice
  - Honorary Emeritus Consultant Psychiatrist, The Children's Hospital at Westmead (without clinical responsibilities)
- I have never had any official or remunerated position with any pharmaceutical company. I have never received payment from a pharmaceutical company for giving a lecture or attending a conference.
- Dr Sheila Metcalf I do not perceive of any actual conflict of interest.
- My other roles are:
- Volunteer speaker for the Royal Flying Doctor Service
- Volunteer Peer Educator (speaker) for "Beyond Maturity Blues" – a program of Beyond Blue initiated by the Council of the Aging NSW.
- Professor Clifford Hughes I do not perceive of any actual conflict of interest.

## **Attachments**

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Attachment 1: NSW Health Criteria for the Diagnosis and Management of Attention Deficit Hyperactivity Disorder in Children and Adolescents, Version 6, June 2004

Attachment 2: NSW Health Criteria for the Diagnosis and Management of Attention Deficit Hyperactivity Disorder in Children and Adolescents, Version 7, May 2007