

2. Background

2.1 Diagnosis, symptoms and causes of ADHD

2.1.1 Diagnosis and symptoms

'Attention deficit hyperactivity disorder' is a term currently used to describe a number of broadly accepted symptoms and behavioural characteristics, core to which are the symptoms of inattention, hyperactivity, and impulsivity. Among the list of names previously applied to the disorder are 'minimal brain dysfunction', 'brain-injured child syndrome', 'hyperkinetic reaction of childhood', 'hyperactive child syndrome', and 'attention deficit disorder'. Over time not only has the name of the disorder evolved, but there has been a significant growth in the understanding of the disorder, as well as changes in the diagnosis and management of children with the disorder.

The behavioural characteristics of the disorder, described in more detail below, can be seen to some degree in most children at some time. To determine whether these are severe—and impairing enough to be clinically significant—a thorough assessment of the child by a skilled, knowledgeable, and experienced clinician is required.

Assessment of the child involves a number of key elements. These include:

- a comprehensive interview with the child's adult caregivers, usually the parent(s);
- a developmental assessment to determine the child's developmental progress, which may lead to further assessment of vision, hearing, and language ability;
- school-related assessments, including reports of behaviour, learning, and attendance at school;
- behaviour rating scales completed by parents and teachers;
- assessment of coexisting mental disorders or comorbidities;
- a medical evaluation, to determine whether other factors may account for behaviour or learning difficulties, such as physical conditions;
- assessment of whether the symptoms are due to another mental disorder, such as anxiety disorder, or the result of stress or trauma, such as abuse.

The two most commonly used diagnostic systems for the diagnosis of ADHD are the *Diagnostic and Statistical Manual of Mental Disorders (DSM-IV)*,⁹ and the *International Classification of Diseases Classification of Mental and Behavioural Disorders (ICD-10)*.¹⁰ In Australia, the National Health and Medical Research Council has recommended that the criteria established in DSM-IV should be the diagnostic criteria used for ADHD.¹¹

The DSM-IV criteria emphasise several factors:

- the symptoms are not transient and must be present for at least six months;
- the symptoms are more frequent and severe than are typically observed in children of a comparable level of development;
- some of the symptoms that cause impairment must have been present before the age of seven years;
- the symptoms must be present in at least two settings, such as at home and at school;
- the symptoms must interfere with the child's social, academic, or occupational

functioning;

- the symptoms are not better explained by another disorder, such as anxiety disorder, schizophrenia, or autism.

The DSM-IV identifies three types of ADHD:

- i) a combined type, where the child has symptoms of inattention, hyperactivity and impulsivity;
- ii) an inattentive type, where the child predominantly has symptoms of inattention;
- iii) a hyperactive-impulsive type, where the child predominantly has symptoms of hyperactivity and impulsivity.

According to the DSM-IV, a child with inattentive symptoms is commonly one who:

- fails to give attention to details or who makes careless mistakes; whose work is often messy and performed carelessly without considered thought;
- has difficulty sustaining attention in tasks and play activities, and who finds it hard to persist with a task until it is completed;
- often appears as if his or her mind is elsewhere or as if he or she is not listening or did not hear what has just been said;
- frequently shifts from one uncompleted task to another; he or she may begin a task, move on to another, then turn to another task without completing any one task;
- does not follow through on requests or instructions;
- often has difficulty organising tasks and activities;
- typically avoids tasks that require close concentration, such as homework, because they are found to be unpleasant and aversive;
- easily loses things that are needed for doing tasks or activities;
- is easily distracted by irrelevant stimuli; he or she attends to trivial noises, such as a car honking or a background conversation, that others would easily ignore;
- is often forgetful in daily activities—for example, missing appointments and forgetting to bring lunch;
- in social situations, may not follow details or rules of games, may not listen to others, or may not keep his or her mind on conversations.

Children who have symptoms of hyperactivity are commonly those who:

- fidget or squirm in their seat;
- fidget with objects, tap their hands, and shake their feet or legs excessively;
- leave their seat when they're expected not to, such as in a classroom or at the dining table;
- run about or climb excessively where it is inappropriate;
- have difficulty playing or engaging quietly in leisure activities, such as listening to a story;
- appear to be 'on the go', as if 'driven by a motor';
- talk excessively, and make excessive noises during quiet activities.

The child with impulsivity is typically one who:

- is impatient, has difficulty in delaying responses, blurts out answers before questions have been completed;

- has difficulty waiting his or her turn, grabs objects from others, and touches things he or she is not supposed to touch;
- excessively interrupts and intrudes on others, makes comments out of turn, and initiates conversations at inappropriate times.

2.1.2 Causes of ADHD

The cause or causes of ADHD are unknown. Some conditions such as fragile X syndrome, fetal alcohol syndrome, lead toxicity and very low birthweight, manifest symptoms of ADHD but these cases make up a very small proportion of children with ADHD.¹²

A variety of factors have been posited to play a causal role, including psychosocial factors, such as parent–child relationships and family dysfunction; and environmental factors, such as food additives and sugar intoxication. However, research in support of these claims has been very limited. They may affect the disorder but are unlikely to cause it.¹²

Recent studies suggest that ADHD is a disorder of the central nervous system. Barkley (1998) has described it as ‘a developmental failure in the brain circuitry that underlies inhibition and self-control’.¹³ He proposes that this loss of self-control impairs other brain functions that are crucial for maintaining attention. Brain imaging research has shown that the brains of children with ADHD tend to differ from those of children without the disorder, with specific areas being slightly smaller and less active.¹⁴ It should be noted that these observations are research findings only and do not provide a diagnostic test for ADHD.

ADHD is highly hereditary.^{15–17} Relatives of children with ADHD, for example, may be up to five times more likely to develop ADHD than relatives of children unaffected by the disorder, while a child who has a parent with ADHD may have a 50 percent chance of experiencing the disorder.^{17,18–20} A shared environment by the family members may explain these findings in part, but studies involving twins and molecular genetics research indicates that the development of ADHD is probably genetically influenced.²¹

2.2 Prevalence of ADHD

ADHD does not appear to be culture-bound, or to be restricted to Western societies such as the United States, Europe, and Australia.^{22,23} Its prevalence is not really known, but a number of studies, mainly overseas and in the United States in particular, have been conducted to determine its prevalence. The rate appears to vary according to the population involved and the diagnostic methods used. For example, it has been argued that physicians outside of the US tend to use more stringent criteria, and reserve the diagnosis for only obvious and severe cases. They may be reluctant to diagnose ADHD at all.²⁴

According to the DSM-IV, between three and five per cent of children have ADHD. In their review, Goldman et al. (1998) found the prevalence of ADHD among children to range from 1.7 per cent to 16 per cent.²⁴ Early research in Australia reported the prevalence rate of hyperactivity to be as high as six per cent.²⁵

In 1998, the National Survey of Mental Health and Wellbeing was conducted to determine the prevalence of mental health problems among Australian children and adolescents. It reported that 11.2 per cent of Australian children aged six to 17 years have ADHD. The prevalence of attention problems alone among children aged four to 17 years was found to be 6.1 per cent.²⁶ Due to the criteria used in this survey, the

estimate of ADHD prevalence is likely to be on the high side.^c

The prevalence of ADHD differs according to various characteristics, such as the child's age and sex, and family or household characteristics.

Lavigne et al. (1996) examined the prevalence of ADHD in a large group of American (Chicago) children aged two to five years.²⁷ Two per cent of the children were identified as having ADHD. The Australian mental health survey reported that the rate of ADHD in children aged six to 12 years was about two times the rate for 13 to 17 year old children.²⁶

It is well documented that ADHD is more prevalent among boys than among girls. The ratio of boys to girls is between 3:1 and 9:1, with the ratio decreasing with age. The Australian mental health survey of children found a somewhat smaller difference between the prevalence rate for boys and girls aged six to 17 years; the rate for boys (15.4 per cent) was just over two times the rate for girls (6.8 per cent).²⁶

Part of the difference in the prevalence of ADHD between the sexes in research findings, and particularly clinic samples of children, may be referral bias; boys may be more likely to be referred for diagnosis because they exhibit more hyperactive-impulsive symptoms than girls.¹⁴

It has been suggested that girls are being under-diagnosed.²⁸ While some girls may display the more classic symptoms of hyperactivity and impulsivity, many may not. The differences between boys and girls who have ADHD are yet to be fully determined but it seems that—relative to boys with ADHD—girls with ADHD display greater intellectual impairment and lower levels of hyperactivity.²⁹ Several other subtypes of ADHD have been identified in very young girls. There is the shy and withdrawn type, who does not readily play with others, and tends to be distracted and forgetful. Then there is the dysphoric or mood disordered type who has prolonged temper tantrums and cannot be pleased, no matter what her parents try to do.²⁸

A number of other psychiatric conditions commonly co-occur with ADHD. Up to 20 per cent of children with ADHD have mood disorders, 20 per cent have conduct disorders, and 40 per cent have oppositional defiant disorder. About seven per cent have tics or Tourette's syndrome, but up to 60 per cent of children with tics also have ADHD.^{24,30} In preschool age children with ADHD, the prevalence of oppositional behaviour is very common.²⁷ The 1998 mental health survey of Australian children examined the prevalence of ADHD, conduct disorder, and depressive disorder. It found that 26 per cent of children with ADHD had either conduct or depressive disorder.²⁶

The 1998 mental health survey of Australian children reported some interesting findings with respect to family-household characteristics. ADHD tended to be more prevalent in step-blended families and sole parent families than in families with original parents. ADHD was also more common in children who lived with parents that were not in paid employment, and in low-income households. The prevalence of ADHD in regions classified as metropolitan was about the same as that in non-metropolitan regions.²⁶

Although regarded as a childhood disorder, ADHD is a disorder that persists into

^c Although the survey used robust instruments for identifying emotional and behavioural problems, it did not include assessment by a clinician. Further, because the survey examined a limited number of mental health problems, it could not determine whether some children identified as having ADHD had other disorders that may have better explained their symptoms, such as anxiety in particular. Thus, a number of children identified in the survey as having ADHD may not have met the formal diagnostic criteria for ADHD described in DSM-IV. It should be noted that the prevalence rate of 11.2 per cent is a 'one year' estimate of prevalence, that is, an estimate of children who had ADHD during the year prior to the survey period.

adulthood. As many as 60 per cent of children developing the disorder go on to display symptoms as adults.³¹

2.3 Treatments for ADHD

Most of the research on the use of treatments for ADHD has been conducted with male Caucasian children. Relatively little is known about the treatment of ADHD in preschool children, adolescents, females, and minorities.³¹

Most treatments for ADHD fall into two general categories: psychosocial intervention and pharmacotherapy.

2.3.1 Psychosocial intervention

Research suggests there are two types of psychosocial intervention that are effective for treating ADHD in children: behavioural parent training and behavioural classroom interventions.³²

Under a clinical behaviour therapy approach, parents undergo weekly group sessions over a period of weeks where they are taught behavioural techniques, such as time out, point systems, and contingent attention. Teachers are also trained by therapists in the use of classroom management strategies. The teachers may also use daily report cards on school performance, for which parents provide a consequence at home.

The more intensive these interventions are, the more effective they appear to be. In the contingency management approach, the strategies are implemented directly by the therapist, professional, or expert teacher rather than by the teacher or parent being trained by a therapist. The strategies are usually conducted in specialised treatment settings, such as special education classrooms and residential settings, where there is greater control over implementation. The difficulty with the contingency management approach is transporting it to other settings, including the home, school and peer settings.

Parent training in behavioural strategies need not be restricted to children of school age; such training may be useful for the management of ADHD in preschoolers.^{33,34}

There are a number of psychosocial interventions that may be used in the management of ADHD, but there is little empirical research to support their use. These include individual therapy, play therapy and cognitive-behavioural treatments. Certain types of cognitive intervention, such as social skills training and problem-solving interventions, may be useful, but probably only when they are part of an intensive, multicomponent behavioural treatment package.³²

The proven psychosocial interventions are not as effective in treating ADHD in children when compared with stimulant medication. When combined with medication, these interventions do appear to produce slightly better results than medication alone. Combining strategies, for example, may lead to lower dosages of medication,³⁵ and less intense behavioural treatment,³⁶ than if each approach is tried alone.

There are significant barriers to the effectiveness of psychosocial interventions. The success of their implementation depends heavily on the motivation and capabilities of the significant adults in the child's life. If key adults are unwilling or unable to implement the interventions, they will not be effective.³² The benefits of psychosocial interventions also do not appear to extend beyond the time they are used; they need to be used on an ongoing basis.

2.3.2 Pharmacotherapy

The most common form of medication used to treat ADHD is stimulant medication. In Australia, this includes the drugs methylphenidate (Ritalin[®], Attenta[®], and dexamphetamine. The use of stimulant medication will be described in more detail later.

A number of non-stimulant drugs have proven useful in clinical practice for the treatment of ADHD in some children. Unlike stimulant medication, these drugs are not subject to monitoring and are not restricted to specialist prescribing. Although evidence is slowly gathering on their use in the treatment of ADHD, more research is needed to determine their effectiveness and safety.³¹

Tricyclic antidepressants and other antidepressants are generally used for children who are intolerant or unresponsive to stimulants, or who have particular concurrent disorders, such as depression, for which stimulants may be less appropriate. Because of their potential for cardiotoxicity, caution needs to be exercised when prescribing for children with suspected cardiovascular disorders. Generally, tricyclic antidepressants are considered a second-line medication treatment for ADHD.^{31,37}

Clonidine (Catapres[®]) is an alpha-adrenergic agonist. In Australia it is approved for use in the treatment of hypertension, migraine, and menopausal flushing. The limited evidence available indicates that it has moderate effects on the symptoms of ADHD and may be particularly useful at reducing aggressive and defiant behaviours.^{38,39} Having a sedating effect, it can also be useful for helping children where sleep disturbance is a major problem.⁴⁰ Increasingly, clonidine is being used as first-line pharmacotherapy for children with Tourette's syndrome.⁴¹ There have been concerns raised about the safety of using it in combination with stimulant medication.^{37,42} Overall, clonidine is not considered a first-line medication for the treatment of ADHD.^{31,43}

Use of stimulants to treat ADHD

It has been well established that stimulant medication is very effective at treating ADHD, and it appears to be the most effective single treatment currently available.

The use of stimulant medication for the treatment of ADHD in children, however, has not been without controversy. The following are some of the concerns that have been raised:

- stimulants are abused by some adolescents and adults;
- children taking the medication may develop a substance-abuse problem;
- children who take the medication will come under pressure to divert their medication to others;
- stimulant use may adversely affect the developing brain;
- stimulants are being used to control behaviours in children at the expense of their genuine needs being met.

To add further to the controversy, in recent times in the US, parents have allegedly been reported to local child protection offices for neglect after withholding their children's medication. Class-action lawsuits have also been filed in the US Federal Courts, which allege that the manufacturers of Ritalin[®] and the American Psychiatric Association have conspired to create and expand the market for Ritalin[®].⁴⁴

Efficacy and administration of stimulant treatment

In their review of the literature on stimulant treatment, Spencer et al. (1996) reported that treatment with stimulants improves abnormal behaviours of ADHD, as well as

self-esteem, social and family function.³¹ It also reportedly improves a wide variety of cognitive abilities, increases school-based productivity, and improves performance in academic testing. The benefits from stimulant treatment are not restricted to school age children, but appear to be applicable to preschool age children as well.^{33,45} Stimulants may also be effective for the treatment of ADHD symptoms in children who have mild to moderate mental retardation or developmental disability.^{31,46}

A favourable response to stimulant medication does not confirm, nor refute, a diagnosis of ADHD. The effects produced by stimulant medication on behaviour and attention are not specific to people with ADHD; they also improve behaviour and attention in children without ADHD.^{47,48}

About 70 per cent of children who are treated with one of the common stimulant medications will experience a significant reduction in hyperactivity or increase in attention. If one drug is not effective, the other usually is, so that as many as 90 per cent of children will respond positively to at least one of the stimulant medications available.^{24,35}

Most of the published research on the effectiveness of stimulant medication comes from the US where methylphenidate is by far the most common stimulant drug prescribed. At this stage, no predictors of response to the stimulant drugs have been identified.⁴⁹ Which drug provides the better outcome, therefore, remains much of a clinical judgement for the practitioner. In a study of children from an Australian hospital, Efron and colleagues (1997) compared the effects of methylphenidate and dexamphetamine over a short period (two weeks on each drug) in children with ADHD.⁵⁰ They found that most children improved on either drug, but response to methylphenidate was slightly better than dexamphetamine.

Taken orally, stimulants are rapidly absorbed and cross the blood-brain barrier easily. Their effect on behaviours appears within 30 minutes, reaches a peak within one to three hours, and is gone by five hours.^{14,51} Thus, to get sustained effects over the course of a day, dosing typically occurs more than once in a day.

In practice, the optimal dose is usually identified by starting with a low dose, then gradually increasing the dose (if required), paying particular attention to clinical effects and side effects. Once an effective and well-tolerated dose has been identified, the dose should be reviewed, and adjustments made, periodically by the clinician, with feedback from parents and teachers. Higher doses do not necessarily lead to better results, and some children may need to have their dose reduced over the course of treatment.³⁵

Psychostimulant therapy does have its limitations. It does not cure or necessarily 'normalise' children with ADHD. A child with ADHD may possess additional disabilities that are not responsive to stimulant therapy and may require other intervention, such as educational remediation.³² Medication may not be helpful in other areas of family life, such as parent-child interactions.³³ In addition to this, stimulant treatment is not helpful for a significant proportion of children (at least 10 per cent), and younger children tend to respond less well to stimulant treatment than older children.³¹ The side effects and other adverse effects associated with stimulant therapy are discussed later.

As is the case with psychosocial interventions, the benefits derived from stimulant treatment are only available while the treatment is offered. The effectiveness of the treatment in the long-term has only recently begun to be assessed, but indications so far are that it is useful as a long-term treatment.⁵²⁻⁵⁴

Prevalence of stimulant treatment

According to research conducted overseas, particularly in the US but also in The Netherlands, the 1990s saw a significant increase in the prevalence of stimulant

prescribing.⁵⁵⁻⁵⁹ Numerous reasons for this increase have been suggested, including increased duration of treatment; more girls, adolescents, and inattentive youths on medication; and an improved public image of the medication treatment.^{56,59}

Safer and Malever (2000) recently examined the prevalence of medications administered in public schools (elementary, middle and high schools) in Maryland, US.⁶⁰ They estimated that 3.65 per cent of students were treated with medication for ADHD. The ratio of boys to girls was just under 4:1. In The Netherlands in 1999, the prevalence of stimulant usage among 0–19 year olds was reported to be 7.4 per 1,000 or just over 0.7 per cent. The ratio of males to females was 5.5:1. Children aged 5–9 years had the highest rate (13.9 per 1,000), followed by 10–14 year olds (10.0 per 1,000), 15–19 year olds (2.5 per 1,000) and then 0–4 year olds (2.3 per 1,000).⁵⁹

Rates of prescribing appear to differ across regions.^{58,60-62} Valentine et al. (1996), for example, found wide variation in the rate of use when they compared the states and territories of Australia in 1993.⁶¹ Western Australia had the greatest rate followed by New South Wales. Several factors may account for such differences, including differences in socioeconomic status and ethnicity, availability of ADHD-specific treatment services, the knowledge and experience of the treating professionals, and attitudes toward the appropriateness of stimulant medication as a form of treatment for ADHD.

Adverse reactions and side-effects of stimulant treatment

The majority of children treated with stimulant medication will experience some adverse effects.⁶³ Most of the adverse effects are mild, short in duration, and generally disappear when the dose and timing of the medication is adjusted. The common side effects are insomnia, decreased appetite, stomachache, headache, and jitteriness. A small number of children will exhibit tics (motor or vocal).²⁴

In practical terms, it can sometimes be difficult for parents and clinicians to clearly identify the side effects of medication; it is not uncommon for many of these 'side effects' to be present before medication is commenced. In one Australian study, more than half of the children with ADHD displayed irritability, anxiousness, proneness to crying, sadness–unhappiness, trouble sleeping, and day-dreams, before commencing medication.⁶³ On medication, many of these symptoms decreased in frequency and/or severity. Some genuine side effects did emerge; for methylphenidate there was appetite suppression, while for dexamphetamine there was appetite suppression and trouble sleeping. Four of the 125 children in the study (3.2 per cent) had to discontinue medication because the side effects were too adverse.

Appetite suppression, and its associated risk for delayed growth, has been a particular concern for children adversely affected by medication. It appears, however, that any delays these children may experience in the short-term do not appear to have a significant effect on final height as an adult. Further, there is evidence to suggest that growth delays experienced by children with ADHD may be a developmental artefact of the disorder.^{31,64,65}

With respect to tics, it is thought that stimulant medication may precipitate their onset but does not cause them.⁴⁹ Gadow et al. (1999) conducted a long-term study of children with ADHD and multiple tic disorder.⁶⁶ The children, who had multiple tic disorder prior to psychostimulant therapy, were evaluated at six-month intervals for two years. Overall, methylphenidate did not exacerbate the children's motor or vocal tics. The authors did caution, however, that children should be carefully monitored to identify any drug-induced exacerbation of tics that may occur in individuals.

Stimulants may cause damage to the central nervous system, cardiovascular damage, and hypertension,⁶⁷ but these effects have been reported only in children taking doses

much higher than the therapeutic doses typically prescribed for children.⁶⁸

Abuse of stimulants

Much of the concern surrounding the use of stimulants for the treatment of ADHD is their potential for abuse.

It has not been clearly established whether stimulant treatment increases the risk of drug abuse.⁶⁷ Weighing up the evidence, several experts are of the view that stimulant treatment does not increase the risk.⁶⁹ Further, some research suggests that treating children with ADHD with psychotropic medication (of which stimulants are the most common) actually reduces the risk of substance abuse disorder during adolescence.⁵

Overall there has been little evidence of the development of tolerance to the effects of stimulants on the symptoms of ADHD and little evidence of a need to increase the dose to get the same response.⁶⁸

Perhaps the primary risk for drug abuse concerns peers. One study conducted in Wisconsin in the US reported that 16 per cent of children prescribed stimulants for the treatment of ADHD had been approached to sell, give, or trade their medication.⁷⁰ Interestingly, none of the children believed stimulants as prescribed could lead to abuse. Most recently, the US General Accounting Office concluded that diversion or abuse of stimulant medications is not a major problem in middle or high schools in the US.⁷¹ From a survey of principals in these schools, they found that eight per cent knew of stimulants being diverted or abused at their school. Most principals reported knowing of only one incident in their school.

2.4 Restrictions on stimulant prescribing in NSW

The prescribing of the stimulants dexamphetamine and methylphenidate in NSW is subject to the *Poisons and Therapeutic Goods Act 1966* and its regulations.

To prescribe stimulants for the treatment of ADHD in children and adolescents in NSW,^d a medical practitioner requires approval from the NSW Department of Health.⁷²

There are two types of approval:

- general approval,
- individual patient approval.

2.4.1 General approval

General approval is only available to consultant paediatricians, and consultant psychiatrists who are members of the NSW Faculty of Child and Adolescent Psychiatry of the Royal Australian and New Zealand College of Psychiatrists ('Child Psychiatrists').

Doctors who have been granted general approval may prescribe stimulant medication to treat children with ADHD without the need to obtain individual Departmental approval for each child, providing certain 'routine prescribing' criteria are met. A child does not meet the routine prescribing criteria if one or more of the following apply:

- the DSM-IV criteria for ADHD are not fulfilled;
- the child is aged less than four years;
- the prescribed dose is 'high' (that is, >0.9mg/kg/day for dexamphetamine; >1.8mg/kg/day for methylphenidate);
- there are significant side effects;

- there is severe psychiatric comorbidity;
- there is pre-existing tic disorder.

Generally-approved doctors who prescribe for children who meet the routine prescribing criteria are required to notify the Department of their prescribing on a monthly basis. For each prescription written they must provide details of the child, including his or her name, date of birth, postcode, suburb or town of residence, the drug and daily dosage prescribed, and the date on which the prescription was written.

2.4.2 Individual patient approval

If a child falls outside the routine prescribing criteria, a generally-approved doctor is required to apply for individual patient approval before prescribing for that child. There is one exception for three years olds. If a child is aged three years and meets no other non-routine criterion, the doctor may initiate a trial of stimulant medication without prior approval. However, the doctor must apply within three months, providing clinical information about the case, for approval to continue prescribing.

Applications to prescribe for children outside routine prescribing criteria must be accompanied by a clinical report. The clinical report should include such information as the child's clinical history, assessments made or planned, the presence or absence of comorbid conditions, the family circumstances, and other treatments instituted or planned.

Cases involving children outside the routine prescribing criteria are referred to an expert committee for consideration.^e

The Department does not grant any approval to treat children aged less than two years of age with stimulant medication. For children who are two years of age, doctors are required to obtain a second opinion from another appropriately experienced practitioner before approval is considered. Once approval is granted, the doctor initiating treatment for the two-year old and the specialist providing the second opinion must provide reports indicating that stimulant therapy is appropriate within three months of commencing treatment. Progress reports are required for all children aged less than four years.

Doctors other than paediatricians and child psychiatrists may apply to the Department to prescribe stimulant medication to children with ADHD on an individual patient basis. These doctors generally fall into the following groups:

- adult psychiatrists;
- advanced trainees in community paediatrics or child psychiatry;
- general practitioners, with paediatric training, working in rural or remote areas;
- general practitioners in a paediatrically-orientated practice.

Once approved as a prescriber, these doctors must seek individual Departmental approval for each child for whom they wish to prescribe stimulant medication. This individual patient approval is restricted to children who meet the routine prescribing criteria described earlier. These doctors cannot prescribe stimulants to children who fall outside the routine criteria; they must refer such children to a paediatrician or child

^d Doctors who wish to prescribe stimulant medication for adults also require approval from the NSW Department of Health. Details are available in the publication *Attention Deficit Hyperactivity Disorder in Adults: Criteria for Issue of Authority Under the Poisons and Therapeutic Goods Act 1966 to Prescribe Dexamphetamine or Methylphenidate*, TG 190/2.

psychiatrist if prescription of stimulants is required.

Individual patient approval is granted in the form of an authority. Authorities are issued for various lengths of time, but no longer than 12 months.

Most prescribing that occurs in NSW does so under general approval. This system of approval has been in place since mid-1996. Prior to this, all approval for the prescribing of stimulants for the treatment of ADHD in children was by way of individual patient approval.

2.5 Aim of this study

The aim of this study is to describe NSW trends in the prescribing of stimulant medication for the treatment of ADHD in children and adolescents. There are five corresponding sections in Methods (Part 3) and Results (Part 4).

- Section 1 presents trends in the number of children with ADHD who commenced stimulant treatment for the first time, for the period 1990 to 2000.
- Section 2 shows the rate (per 1,000 population) of children with ADHD who were treated with stimulant medication as at 30 June, for the period 1990 to 2000.
- Section 3 examines the characteristics of children with ADHD who were treated with stimulant medication as at 1 December 2000.
- Section 4 presents the characteristics of children aged less than four years who were commenced on stimulant medication in the period 1 January 1999 to 30 June 2000, based on individual patient approvals to prescribe.
- Section 5 examines attrition from stimulant treatment using a cohort of children commenced on stimulant medication in 1997.

^e This committee is the Stimulants Subcommittee of the Medical Committee. See Footnote b for more details.

