Pharmaceutical Services Branch

Stimulant Prescribing

Children and Adolescents

Department of Health and Human Services

Tasmania
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CRITERIA FOR THE DIAGNOSIS AND MANAGEMENT OF ATTENTION DEFICIT HYPERACTIVITY DISORDER IN CHILDREN AND ADOLESCENTS

This document draws extensively from the NHMRC report "Attention Deficit Hyperactivity Disorder" and the NSW Health guidelines *"Prescribing Criteria for Authorisation under the Poisons Act to prescribe Dexamphetamine and Methylphenidate for Attention Deficit Hyperactivity Disorder (ADHD) in Children and Adolescents*" **(TG181/6)**. Among other things, the NHMRC report includes a review of "scientific literature and advice formulated by authoritative sources in Australia and overseas" with the object of determining "appropriate methods of diagnosis and management" of ADHD.

Prescribers are encouraged to use the NHMRC report and other modern comprehensive reviews of practice and research regarding ADHD and its management. These are listed at the end of Part A.

PART A deals with "Clinical Issues Relating to the Diagnosis and Management of Attention Deficit Hyperactivity Disorder in Children and Adolescents (based on the NHMRC Report, Attention Deficit Hyperactivity Disorder, December 1996)".

PART B deals with "Legal, Policy and Procedural Issues Relating to the Prescribing of Dexamphetamine and Methylphenidate for Attention Deficit Hyperactivity Disorder in Children and Adolescents."

It is important that the management of patients is in accordance with Part A and the legal requirements are complied with as detailed in Part B.

In Tasmania, the *Poisons Regulations 2008* require that a medical practitioner seek and obtain the authority of the Secretary before issuing a prescription for the schedule 8 stimulants dexamphetamine and methylphenidate. The prescribing of psychostimulants is generally restricted to specialists. The Psychostimulant Advisory Panel will advise on exceptional applications. These are applications that fall outside the normal guidelines as detailed in Part B.

PART A

Clinical Issues Relating to the Diagnosis and Management of Attention Deficit Hyperactivity Disorder in Children and Adolescents (based on the NHMRC Report, Attention Deficit Hyperactivity Disorder, December 1996).

CRITERIA FOR DIAGNOSIS

As a minimum, the criteria set down in DSM-IV should be fulfilled before a diagnosis of ADHD is made.

AETIOLOGY

The aetiology of ADHD is essentially unknown. Evidence suggests that many factors, including genetic, neurophysiologic, cognitive, familial and environmental factors are involved. It is likely that a combination of these factors contributes to the symptoms of ADHD.

PREVALENCE

The use of either a categorical or trait approach to the classification of symptoms and signs results in different prevalence rates and, consequently, widely differing prevalence rates of ADHD have been reported, depending on the methodology used, ranging from 1.7% to 6%. Australian studies have found prevalence rates of ADHD between 2.3% and 6%. Most studies have found a higher incidence of ADHD in boys than girls, with boys scoring higher particularly on measures of hyperactivity and disruptive behaviour scales.

ASSESSMENT

A comprehensive assessment of a child with suspected ADHD should include the following elements:

History: Family, past and current medical, psychosocial and developmental.

Medical: Physical and neurological examination and any appropriate investigations.

Developmental: To exclude significant specific and/or global problems, hearing and vision difficulties, and further referral as appropriate.

Behavioural: Description of behaviour in various settings, especially home and school.

Family and Relationship Function: An assessment of the child's relationship with family members, the overall functioning of the family and the child's relationships with peers.

Educational: A review of classroom observations and prior testing, including estimates of intellectual capabilities (incorporating intellectual/cognitive assessment), strengths and weaknesses and measure of academic achievement, including language development.

Multiple sources of information should be utilised during assessment, eg parents, care-givers and relevant professionals, especially teachers. Appropriate rating scales should be used as part of the assessment for obtaining systematic information from different settings and to gauge treatment response.

MULTIMODAL MANAGEMENT

Like all behavioural conditions, ADHD involves many variables which combine to push the child towards and over the threshold of the disorder, or protect from that threshold. These intrinsic traits and environmental factors must all be addressed in diagnosis and treatment. This is the rationale for multimodal management which will maximize strengths and minimize the most significant vulnerabilities within the limitations of available resources. Approaches may typically combine medication, behavioural and family support and developmental therapies such as language therapy. **A specific multimodal plan should be individualised for each child with ADHD and their family**. The individualised plan should take account of associated problems such as learning difficulties, peer relationships, low self-esteem, family dysfunction and co-morbid conditions.

Many agencies and professionals may be involved in multimodal management. Collaborative management is essential, involving individuals with ADHD, their families, teachers and professionals from health care and other agencies.

Multimodal therapy is widely accepted as being a more effective mode of management than any individual form of management used in isolation.

With time, development and intervention, the relative importance of various intrinsic and environmental variables and available resources may change. Regular review is important to ensure that multimodal management remains appropriate and effective.

An essential component of all behavioural therapies is continuing review, reinforcement, modification and refinement of strategies and outcomes.

Frequency of review will depend on age, stage and complexity of treatment, educational and family factors, and should involve three to six monthly **review.** However, at least once a year a review should occur covering medication, educational progress and behaviour in home and other settings. Such a review should collect information from multiple sources and specifically evaluate any deterioration following significant interruptions to the medication regimen.

STIMULANT MEDICATION

Dexamphetamine and methylphenidate act on dopaminergic and noradrenergic neurotransmitter pathways and appear to influence mainly prefrontal, frontal and limbic systems with benefits on disruptive behavioural inhibition, impulse control, selective attention, active working memory and executive functioning. There is no 'paradoxical effect' of 'stimulant' appearing to 'sedate' disruptive behaviour. There are no direct effects on consciousness or moral judgment.

Though similar in clinical effects, the stimulants differ in how they increase neurotransmitter concentrations in the synapse. Dexamphetamine appears to release newly synthesised dopamine and block uptake postsynaptically, while methylphenidate releases stored dopamine. There is wide individual variation in metabolism and effect. Generally, both medications have clinical effects within about 30 minutes and benefits wane after about three hours (though dexamphetamine falls to half its concentration in up to 11 hours compared with the methylphenidate half-life of up to three hours).

While the response of most children is similar for both methylphenidate and dexamphetamine, the efficacy and side-effects are not identical. Some children may respond better to one than the other. Consideration should be given to trialling both medications, particularly when it seems that high doses are necessary.

Most studies demonstrate improved benefits with increasing dosage on behavioural symptoms and recently published studies give strong evidence for cognitive improvement with linear dose responses. The variation between individuals and behaviours requires dosage to be ‘tuned’ to the individual's most disabling symptoms (limited by maximal effect balanced against toxicity).

THE ROLE OF STIMULANT MEDICATION IN THE MANAGEMENT OF ADHD

There is considerable pressure to treat ADHD with its disruptive symptoms, associated learning, behavioural and emotional problems, family stress, and possible persistence into adolescence and adulthood. For a minority the outcome is antisocial behaviour, criminality and substance abuse. The multiplicity of etiology, heterogeneity of presentations, changes over time, and intervention and range of possible treatments, make management complex and confusing. Approaches to diagnosis and treatment are not equally validated and support is compromised by the lack of, or long waiting lists for, support services. This context emphasizes the use of medication which can have powerful short-term benefits for disrupted behaviour and performance.

The need for medication and its effectiveness is relative to the nature and severity of problems and the use of other interventions. A multimodal approach, especially with educational and behavioural supports, should be used if available. Although medication is the most effective short-term treatment for the disruptive behaviours of ADHD, other approaches may add to the success of medication and be essential if medication is ineffective.

Comprehensive assessment and management is emphasised in managing ADHD. Day-to-day support for the vulnerable individual at home, and in other settings, should be provided. Management is, however, complex and time consuming and requires collaboration. Medication, whilst the best validated of the various interventions, is likely to be better accepted when accompanied by advice regarding other supports. Referral to supports should be vigorously pursued. The prescribing of medication is exclusive to the medical practitioner, but few can provide intensive, prolonged behavioural and emotional management. ADHD usually requires, among other services, psychological or psychiatric support.

ADVERSE EFFECTS OF STIMULANTS

Adverse effects fall into several groups:

- physiological effects of noradrenergic activation;
- those associated with pharmacokinetics of single or repeated doses waxing and waning over three to four hours;
- different individual responses between doses and between the two stimulants; and
- other idiosyncratic responses.

To interpret and identify side effects accurately requires careful observation. Is the possible symptom present before, unchanged by or begun with medication? Does it relate to a dose wearing off, to a dose increase or is it less if stimulant treatment is interrupted? Does it occur with either stimulant or only one, and at what dose? Is it present in particular situations? Is it affected by other variables - for example, an unreasonable demand on learning disability, change in others' behavioural responses (eg relief teachers) or any other disruptive event (eg family sickness, disruption or loss)?

The dose required, its benefits and side effects vary among individuals. Optimal treatment depends on the balance between the best improvement of the most significant problems (eg disruptive behaviour), relatively lesser effect on other problems (eg cognitive improvement) and the existence of any side effects (eg mild appetite, sleep, mood or tic problems). Symptoms commonly attributed to stimulant side effects can occur in children without ADHD, without medication or as the characteristics of ADHD and its differential diagnoses. Side effects may be confused with symptoms of nonresponse, or with symptoms which occur as a dose wears off, or with use of inadequate dosage. Such confusion may cause vigorous debate and conflict between patient and family members, and between family members and professionals. Empirical adjustments and observations can establish individual optimum dosage, particularly evaluating doses given later in the day and at weekends and holidays.

Significant side effects which should always be taken seriously include tics, major mood changes with marked sadness, anxiety, aggression and any bizarre or persecutory thoughts.

POLYPHARMACY

Associated problems, such as learning difficulties, low self-esteem and co-morbid conditions, require specific treatment. If treatment of ADHD and/or co-morbid conditions results in polypharmacy, the likelihood of side effects increases and careful monitoring becomes even more essential. There are no controlled scientific studies supporting the efficacy and safety of most non-stimulant medications in ADHD. These medications are subject to fewer regulatory prescribing controls than stimulant medication. **Expert opinion is recommended in these circumstances.**

REFERENCES

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   (v) *Clinical Practice Guideline: Diagnosis and Evaluation of the Child With Attention-Deficit/Hyperactivity Disorder.* American Academy of Pediatrics. Pediatrics Vol. 105 (May 2000).
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PART B

Legal, Policy and Procedural Issues Relating to the Prescribing of Dexamphetamine and Methylphenidate for Attention Deficit Hyperactivity Disorder in Children and Adolescents.

THE POISONS ACT 1971 AND POISONS REGULATIONS 2008

Under Regulation 19 *Poisons Regulations 2008* no medical practitioner can, without the authority of the Secretary issue a prescription for or supply to a patient certain narcotic substances. Dexamphetamine and Methylphenidate are two of these substances. The prescribing of these drugs must be under the direction of child psychiatrists, paediatrician, or specialist physician and an authority is given to the relevant specialist on application. The specialist may request a GP to act as a co-prescriber under their direction and the permit issued reflects this.

Prescribing cannot occur until an authority is issued on behalf of the Secretary by the Pharmaceutical Services Branch (PSB).

PRESCRIBERS

Paediatricians and Child Psychiatrists who wish to prescribe stimulants are:

- required to complete forward an application "application for authority to prescribe amphetamine or related substances (Dexamphetamine or Methylphenidate) for children and adolescents (under 18 years)" to PSB.
- to ensure patient management is in accordance with Part A.
- to prescribe in accordance with the routine prescribing criteria as detailed below.
- if a co-prescriber, is requested to name that prescriber. The co-prescriber is to prescribe under the specialist's direction
- **Note:** if a co-prescriber is requested only one prescriber can write prescriptions. In these instances this is normally the GP.

ROUTINE PRESCRIBING CRITERIA

(1) **AGE.** Patients must be aged **3** to **18** years or when they cease schooling, which ever is the earliest. However patients must be referred to a psychiatrist by 25 years. Initiation over 17 years is as an adult under the adult criteria.

Children aged between 2 years and 3 years require a second specialist opinion. Prescribing less than 2 years is not approved.

NOTE: Prescribers should be familiar with current product information regarding use of methylphenidate and dexamphetamine at different ages.

(2) **DOSAGE.** Prescribed doses must not exceed:
Dexamphetamine: **0.9mgm/kg/day**.
Methylphenidate: **1.8mgm/kg/day**

(3) **ABSENCE OF EXCLUSIONARY FACTORS**

As detailed below.

EXCLUSIONARY FACTORS

Routine authorisation will not occur for adolescent patients in whom:

a) the age or dosage is outside the range specified above, or
b) the DSM-IV criteria for ADHD are not fulfilled, or
c) there are significant side effects, or
d) there is severe psychiatric co-morbidity, or
e) there exists a severe tic causing significant impairment and distress or requiring treatment in its own right.
f) treatment is for a condition other that ADHD.

Paediatricians and Child Psychiatrists must make individual patient applications for patients outside the routine prescribing criteria and these applications will be treated as exceptional applications and referred for assessment to the Psychostimulant Advisory Panel.

NB 1 - Psychosis is an absolute contraindication to stimulant therapy.
NB 2 - Concerns about, or evidence of, the misuse of appropriately prescribed stimulant medication should be immediately notified to the Branch. If there is evidence of misuse by the child or guardians, conditions may be placed on the authorisations issued.

The Psychostimulant Advisory Panel can request reports and/or other opinions on any patient within or outside routine criteria.

PROCEDURES FOR APPLICATION FOR AUTHORITY TO PRESCRIBE FOR CASES OUTSIDE THE CRITERIA.

(1) AGE.

Children under two years of age. Authorities will not be granted.

Children aged two. Before the initiation of stimulant therapy, an initial application accompanied by a second opinion must be forwarded and approved. Three months is the maximum length of authority for children aged two.
Within three months, the original prescriber, **and** the specialist giving the second opinion, must provide reports indicating that stimulant therapy is appropriate.

Applications for authority **renewals** for children aged two must be accompanied by a report from the initial prescriber **and** from the specialist giving the second opinion, **until age three**.

Second opinions must come from a practitioner experienced in the area and where possible from a different speciality to the prescriber.

The clinical reports for all applications for this age group will be considered by the Stimulants Subcommittee.

Children aged over three. An authorisation will remain in effect until the patient reaches the age of 18 years or has completed secondary school, whichever is the sooner. However, this authorisation may be modified or cancelled at an earlier date by notice to you in writing. Continued authorisation to a paediatrician may be granted until completion of tertiary studies.

Children aged 17 If initiated at this age assessment to be as an adult by an adult psychiatrist, specialist neurologist or sleep/respiratory physician.

Treatment of older patients

(1) Adult Psychiatrists may initiate treatment in patients who are aged 16 to 17 years (inclusive).

(2) Treatment cannot be initiated by a Paediatrician in a patient who is 18 years of age or older.

(3) Prior authorisation may continue to be used to age 25 if undertaking tertiary study provided that the patient meets the criteria and conditions of "*Criteria For The Diagnosis And Management Of Attention Deficit Hyperactivity Disorder In Adults*". This must be notified to the Department on the Notification form and a new application submitted when the patient turns 18 years of age.

EXCEPTIONAL APPLICATIONS

Individual patient applications by authorised prescribers **(Paediatricians and Child Psychiatrists)** for cases which fall **outside** the routine prescribing criteria need to be accompanied by a thorough clinical report. The report, as appropriate, should outline the clinical history, the patient's height and weight, the differential diagnoses, assessments made or planned, the presence or absence of co-morbid conditions, the family circumstances, and all other treatments instituted or planned. These will be referred to the Psychostimulant Advisory Panel.

NOTES ON PRESCRIPTIONS FOR DEXAMPHETAMINE AND METHYLPHENIDATE

Prescriptions must be written in accordance with the requirements under the Poisons Regulations pertaining to the prescribing of any Schedule 8 medication.

(1) One copy of the prescription must be completed and signed in the prescribers own handwriting.

(2) The prescription must show the quantity to be dispensed, must include adequate directions for use.

(3) If the prescription is to be dispensed more than once, the prescription must show the number of repeats and the minimum interval at which they may be supplied.

(4) Stimulants (**Schedule 8**) prescriptions are valid for only **six months** from when written. Schedule 8 prescriptions written by prescribers not registered in Tasmania are not valid. (This is also true in other states). It is generally expected that patients will be clinically reviewed prior to renewal of prescriptions.

APPLICATIONS AND FURTHER ENQUIRIES FOR STATE APPROVAL TO:

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Children and Adolescents