

3. Methods

3.1 Section 1: Trends in the number of children and adolescents treated with stimulant medication for the first time

The number of children treated with stimulant medication for the first time in each of the years 1990 to 2000 was determined and analysed by various characteristics of the child and the treatment.

Data on authorities issued and prescriptions written for stimulant medication for the treatment of ADHD in persons aged less than 18 years were extracted from the NSW Department of Health *Pharmaceutical Drugs of Addiction System* for the period 1 January 1990 to 31 December 2000.^f Children treated with stimulant medication for the first time in each year were identified. The date on which treatment was deemed to have started was either the date on which the first authority was issued, or the date on which the first prescription was written, with respect to the child.

For each year in the period 1990 to 2000, the number of children commenced on stimulant medication for the first time was determined according to the following characteristics: age of child at commencement of stimulant treatment, sex of child, and drug used.

Children residing outside NSW were excluded from all analyses. Whether a child resided outside NSW was determined according to his or her address as at the time of data extraction.^g

It should be noted that data over the period 1990 to 2000 are not strictly comparable. Data for the period 1990 to 1995 concern authorities (issued for individual patient approval) only, while the period 1996 to 2000 concern both authorities (issued for individual patient approval) and prescriptions (written under general approval).

3.2 Section 2: Trends in the rate of children and adolescents treated with stimulant medication

The prevalence of children treated with stimulant medication as at 30 June of each year in the period 1990 to 2000 was determined and analysed by various characteristics of the child and the treatment.

Data concerning authorities issued and prescriptions written for stimulant medication, for the treatment of ADHD in persons aged less than 18 years, that were valid as at 30 June were extracted from the NSW Department of Health's *Pharmaceutical Drugs of Addiction System* for each year in the period 1990 to 2000. An authority was deemed to be valid on 30 June of a given year if it was issued on or before this date and expired on or after this date. A prescription was deemed to be valid if it was written in the six-month period to 30 June of a given year, unless the child was aged three years at the date of the prescription, in which case it was deemed to be valid in the three-month period

^f People were aged less than 18 years on the date on which the authority was issued or the prescription written.

^g Data were extracted on 24 May 2001. It was necessary to use the address as at the time of the data extraction because historical information on address was not available.

to 30 June of that year.^h A child was considered to have been treated with stimulant medication if he or she had a valid authority or prescription.

As at 30 June of each year in the period 1990 to 2000, the number of children treated with stimulant medication per 1,000 resident population of NSW aged two to 17 years was calculated using population data from the Australian Bureau of Statistics.ⁱ The rate of children treated with stimulant medication was determined according to the following characteristics: age of child, sex of child, and drug used.

Children residing outside NSW were excluded from all analyses. Whether a child resided outside NSW was determined according to his or her address as at the time of data extraction.^j

It should be noted that data over the period 1990 to 2000 are not strictly comparable. Data for the period 1990 to 1995 concern authorities only, while the period 1996 to 2000 concern both authorities and prescriptions.^k

3.3 Section 3: Characteristics of children and adolescents treated with stimulant medication

The prevalence of children treated with stimulant medication as at 1 December 2000 was determined and analysed by various characteristics of the child and the treatment.

Data concerning children on stimulant medication for the treatment of ADHD as at 1 December 2000 were extracted using the method described in Section 2. A child was considered to have been treated with stimulant medication as at 1 December 2000 if he or she had a valid authority or prescription as at 1 December 2000. These data were analysed according to the following characteristics: age, sex, drug and dose, health area of residence, and treatment duration.

Age-specific rates per 1,000 resident population were calculated using population data from the Australian Bureau of Statistics.^l

Rates for individual health areas were calculated using population data from the Australian Bureau of Statistics.^m Health area of residence was based on the child's address as at the time of the data extraction.ⁿ

Data concerning dose are presented only for children who had a valid prescription. Comparable data for children for whom an authority was valid as at 1 December 2000 were not available.

Treatment duration was calculated as the number of days a child had continuously received stimulant treatment up until 1 December 2000. Where there was a break of no more than 182 days ('six months') between consecutive valid authorities or prescriptions^h Under the *Poisons and Therapeutic Goods Act 1966*, prescriptions for stimulants (and all other Schedule 8 drugs) are valid for only six months from when written. The valid life of a prescription for three-year olds was restricted to three months because doctors may only prescribe to these children on a trial basis before obtaining an individual patient authority.

ⁱ Australian Bureau of Statistics. *Estimated Resident Population by Sex and Age, States and Territories of Australia*. Catalogue no. 3201.0.

^j See footnote g

^k As at 30 June 1996, the proportion of children treated with stimulant medication based on a valid authority was 95.9 per cent compared with 4.1 per cent with a valid prescription. The comparable proportions, respectively, for 30 June 2000 were 2.3 per cent and 97.7 per cent.

^l Australian Bureau of Statistics. *Estimated Resident Population by Sex and Age, States and Territories of Australia*, Catalogue no. 3201.0; preliminary figures were used for 2000.

preceding 1 December 2000, a child was deemed to be continuously receiving treatment. (As described earlier, for children aged three years, a prescription was defined as being valid for a period of three months from the date it was written, while a prescription for a child aged four years or over was defined as being valid for a period of six months from the date it was written.) Treatment duration (in days) was calculated from the date of the first authority or prescription in the sequence of continuous treatment to 1 December 2000.

Children residing outside NSW were excluded from all analyses. Whether a child resided outside NSW was determined according to his or her address as at the time of data extraction.^o

3.4 Section 4: Two- to three-year olds treated with stimulant medication

Children aged less than four years ('Two- to three-year olds') for whom an individual patient authority was issued for the first time in the period 1 January 1999 to 30 June 2000 were identified using the NSW Department of Health's *Pharmaceutical Drugs of Addiction System*. For the 57 children identified, the individual patient files containing application forms, clinical reports and other supporting evidence, were examined. Information was collated on the following variables: age, sex, presence of comorbid conditions, age of onset of ADHD symptoms, presence of familial ADHD, previous treatments used, effectiveness of stimulant medication, and side effects experienced.

3.5 Section 5: Attrition from stimulant treatment

Children aged three to 15 years who received their first *prescription* in the year 1997 were identified. To simplify the analysis, children for whom an individual patient authority had ever been issued were excluded. For each child, the date of the last prescription was determined by examining all prescriptions that had been notified to the Department of Health.^p The time between the date of the first prescription and the last prescription for each child was then calculated to represent a measure of attrition from stimulant medication.

3.6 Caveats

For the purposes of this study, it is assumed that a child is being treated with stimulant medication if an authority for stimulant medication has been issued with respect to the child, or if a prescription for stimulant medication has been written for the child. It is also assumed that a child is on stimulant medication for the period over which an authority or prescription is valid. The extent to which these assumptions are valid is unknown.

^m Australian Bureau of Statistics. *Estimated Resident Population by Sex and Age, 30 June 1998*, unpublished data provided by the Epidemiology and Surveillance Branch, NSW Department of Health.

^pData were extracted on 24 May 2001. Therefore, health area of residence was based on address as at 24 May 2001 and not 1 December 2000. Information concerning a child's address as at 1 December 2000 was not available.

^o See footnote g.

An authority indicates a doctor's intention to prescribe stimulant medication for a particular child. When a doctor is issued with an individual patient authority, however, he or she may not necessarily proceed with writing a prescription for stimulant medication.

When a prescription has been written for a child, the prescription may not be filled. If the medication is dispensed, the child may not take the medication at all or may take the medication for only a short period of time (less than the period over which an authority or prescription is valid).

Therefore, a number of children may be counted as being on stimulant medication when in fact they are not. On the other hand, a number of children may not be included in the figures when they should be. An example of this is the child who continues to take medication beyond the period over which the authority or prescription is valid. The child may have surplus supplies of medication because he or she has spent some time off medication during the period over which the medication was prescribed.

These issues should be taken into consideration when interpreting the data contained in this study.

^p All prescriptions that had been notified to the Department as at 4 June 2001 were considered. Due to delays in notification and recording, the *Pharmaceutical Drugs of Addiction System* as at 4 June 2001 would not have included all prescriptions written up to 4 June 2001. It included most notified prescriptions to February 2001.