



# **An Analysis of Prescribing of Methylphenidate Hydrochloride in QRESEARCH**

*An analysis using QRESEARCH  
for the Department of Health*

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## 1 EXECUTIVE SUMMARY

This report uses the Pilot QRESEARCH (43 practices) dataset to report on the prescribing of Methylphenidate Hydrochloride (Ritalin, Concerta and generic) in 2002.

The rate of prescribing in all people under the age of 18 years was:

- In males - 3.11 (95% CI 2.50 to 3.82) persons per 1000 person years of registration in the year 2002, peaking in the 10-14 age group
- In females – 0.29 (95% CI 0.12 to 0.57) persons per 1000 person years of registration in the year 2002

Six patients aged six years or less were prescribed methylphenidate contrary to advice in BNF.

Prescription numbers were similar to those in the Prescription Cost Analysis data (2002).

The median quantity on individual prescriptions was 900 mg (IQR 600-1500mg).

QRESEARCH can be used for similar studies of prescribing.

## **2 AIMS**

Ritalin is a high-profile and controversial drugs used to treat attention-deficit hyperactivity disorder in children. The aim of this work was to:

1. Analyse the number, age and gender of patients aged under 18 receiving Ritalin
2. Report on the quantities prescribed per prescription

## **3 METHODOLOGY**

### **3.1 Eligible population**

The analysis for this report used prescriptions by age and sex for the calendar year 2002 (ie period January 2002 to December 2002 inclusive). The eligible population for the search was all registered patients aged under 18 years in 2002. All 43 practices in the QRESEARCH pilot database had used their EMIS computer system for the whole of 2002, and so were eligible for inclusion.

### **3.2 Numerator for prescribing rate**

The numerator for the rate was the number of patients issued one or more prescriptions for Methylphenidate Hydrochloride.

### **3.3 Denominator for prescribing rate**

We used two different denominators to derive two different rates. These were

(a) Mid-year population.

This is defined as the number of patients registered on 1 July 2002 and for the whole of the preceding six months.

(b) Person years at risk for registered population.

This is the sum of the number of days each patient was registered with their QRESEARCH practice, divided by the number of days (365.25) in the year.

## RESULTS

### 3.4 Analysis 1: Analysis of prescription by age and sex of patients

Table 1a shows the number of patients prescribed methylphenidate hydrochloride during 2002 by age and sex. Overall, there were 98 patients under 18 years who were prescribed methylphenidate hydrochloride. Of these, 90 were males and 8 were females. The rate was 3.11 patients per 1000 person years (95% CI 2.50 to 3.82) for males and 0.29 per 1000 person years (95% CI 0.12 to 0.57) for females. Males aged 10 to 14 had the highest prescribing rates which was 6.38 per 1000 person years (95% CI 4.81 to 8.31). The rates in each age band were similar whether they were calculated using a person years denominator or a mid year population denominator.

**Table 1a: Number and rate per 1000 patients prescribed Methylphenidate Hydrochloride during the calendar year 2002 by age and sex.**

Sex	Age band	Number of patients prescribed drug	Patient years	Mid year population	Rate per 1000 person years	L 95% CL	U 95% CL	Rate per 1000 registered patients	L 95% CL	U 95% CL
Males	0 to 4 years	0	7,347.89	5,651	0.00	0.00	0.50	0.00	0.00	0.65
Males	5 to 9 years	25	8,135.66	7,911	3.07	1.99	4.54	3.16	2.05	4.66
Males	10 to 14 years	55	8,619.56	8,413	6.38	4.81	8.31	6.54	4.92	8.51
Males	15 to 17 years	10	4,875	4,792	2.05	0.98	3.77	2.09	1.00	3.84
<b>Total males</b>	<b>17 and under</b>	<b>90</b>	<b>28978.11</b>	<b>26767</b>	<b>3.11</b>	<b>2.50</b>	<b>3.82</b>	<b>3.36</b>	<b>2.70</b>	<b>4.13</b>
Females	0 to 4 years	1	6,860.12	5,314	0.15	0.00	0.81	0.19	0.00	1.05
Females	5 to 9 years	2	7,670.03	7,469	0.26	0.03	0.94	0.27	0.03	0.97
Females	10 to 14 years	4	8,383.61	8,137	0.48	0.13	1.22	0.49	0.13	1.26
Females	15 to 17 years	1	4,974.04	4,861	0.20	0.01	1.12	0.21	0.01	1.15
<b>Total females</b>	<b>17 and under</b>	<b>8</b>	<b>27887.8</b>	<b>25781</b>	<b>0.29</b>	<b>0.12</b>	<b>0.57</b>	<b>0.31</b>	<b>0.13</b>	<b>0.61</b>
total	0 to 4 years	1	14,208.01	10,965	0.07	0.00	0.39	0.09	0.00	0.51
total	5 to 9 years	27	15,805.69	15,380	1.71	1.13	2.49	1.76	1.16	2.55
total	10 to 14 years	59	17,003.17	16,550	3.47	2.64	4.48	3.56	2.71	4.60
total	15 to 17 years	11	9,849.04	9,653	1.12	0.56	2.00	1.14	0.57	2.04
<b>Grand total</b>	<b>17 and under</b>	<b>98</b>	<b>56865.91</b>	<b>52548</b>	<b>1.72</b>	<b>1.40</b>	<b>2.10</b>	<b>1.86</b>	<b>1.51</b>	<b>2.27</b>

Table 1b (Excel workbook: Ritalin results DOH March 04(1).xls) shows prescriptions by single year of age and sex per 1,000 person years. The BNF recommends that this drug is only used in patients over the age of six. We found 6 patients younger than seven who had been prescribed the drug during 2002.

### 3.5 Analysis 2: Analysis of prescriptions by dose

Table 2a shows the quantities of methylphenidate hydrochloride prescribed per prescription. There were 692 prescriptions items issued during 2002. The most commonly prescribed strength of medication was 10 mg, which was issued in 393 prescriptions (56.8% of 695). Following this, 5 mg was issued in 142 scripts and 36mg in 11.4% of scripts.

**Table 2a Number of prescriptions and tablets for Methylphenidate by strength issued during 2002**

<b>Strength of tablet</b>	<b>Number of prescriptions</b>	<b>% of total scripts</b>	<b>Total number of tablets</b>	<b>% of total tablets issued</b>
5 mg	142	20.5	18,785	29.0
10 mg	393	56.8	40,292	62.1
18 mg	52	7.5	1,512	2.3
20 mg	26	3.8	1,860	2.9
36 mg	79	11.4	2,418	3.7
<i>total</i>	692	100.0	64,867	100.0

We compared the proportion of prescription issued on the QRESEARCH database with the proportion of scripts for each strength reported in by the Prescription Cost Analysis 2002. The rankings obtained were similar as shown in table 2b. 64.4% of all PCA prescriptions for 10mg compared with 56.8% of items on QRESEARCH.

**Table 2b Quantity of prescriptions issued from Prescribing Cost Analysis data 2002**

<b>PCA summary for methylphenidate hydrochloride prescriptions</b>	<b>Prescription items (thousands)</b>	<b>% of total</b>
all 5 mg preparations	31.4	12.37
all 10 mg preparations	163.5	64.43
all 18 mg preparations	19.8	7.79
All 20 mg preparations	14.3	5.65
All 36 mg preparations	24.8	9.78
<i>total</i>	253.8	100.02

### 3.6 Median quantity per prescription

We have undertaken an analysis of the quantity of methylphenidate hydrochloride issued on individual prescriptions. This can be done in a variety of ways. If a patient is issued with a prescription for 15 mg daily for 30 days, the prescription might say either:

- (a) 5mg tablets, three times daily for 30 days ==90 tablets each of 5mg. This would give a total milligram prescribed for the patient of 450 mg (ie 5mg\*90)
- (b) 10mg once a day and 5mg once a day for 30 days==thirty 10mg tablets and sixty 5mg tables. The total milligrams prescribed would be the same ie 450 mg per prescription item.

There are, of course, other possible combinations.

In the EMIS system, (a) would be shown as a single prescription item but (b) would be shown as two prescription items for the same patients issued on the same date. As far as the patient is concerned, the total quantity of medication in mg is the same in either case

In order to determine the median quantity prescribed, we added up the total number of milligrams issued to each patient on each day so that (a) and (b) were both equivalent to 450mg (for example). We then determined the median mg per prescription given to the patients and the inter-quartile range.

We found that the median quantity on individual prescriptions was 900 mg (IQR 600-1500mg).

The possible likely permutations could include

- 30mg daily [eg 10mg tds] for 30 days
- 15mg daily [eg 10mg daily + 5mg daily] for 60 days

10mg daily for 90 days

If requested, we could undertake a further analysis to determine the gap in days between prescriptions to determine whether the frequency of prescriptions and hence the likely daily dose.

[Note: The BNF recommends an initial dose of 5mg 1-2 times per day increasing up to a maximum dose of 60mg per day in divided doses].

## **4 CONCLUSIONS**

This analysis is based on the QRESEARCH pilot database of 42 practices. Within a few months the full database covering approximately 500 practices and with a wider geographic spread will be available. Some patients may be on methylphenidate hydrochloride without appearing in this dataset, if for example their prescribing was only undertaken in a specialist centre. However our experience is that, once stabilized, prescribing for methylphenidate hydrochloride is usually a shared care responsibility with monitoring in a specialist clinic accompanied by prescribing in general practice.

In the under 18 population, methylphenidate hydrochloride is predominantly prescribed to males. The most common age group to receive it is the 10-14 band. A few prescriptions are issued to those aged 6 or less; we cannot comment on the location of these prescribing decisions which may have been in general practice or, more likely, in a specialist clinic.

The median dose prescribed on individual prescriptions equates, if monthly prescriptions as is most common, to half the maximum recommended dose for methylphenidate hydrochloride.

This analysis has shown good comparability with the PCA data and has validated the potential to use QRESEARCH for similar studies in future.