



Prescribing in Older People by British National Formulary Chapter: Analysis of QRESEARCH Data

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2 EXECUTIVE SUMMARY

This report contains a QRESEARCH analysis of prescribing in older people. It is an analysis of BNF chapter rates, comparison to other datasets and a report on inter-practice variations. The key findings are:

- Over the population, the average number of prescriptions was 32,950 per 1,000 patient years in 2002, or just under 3 prescriptions per month.
- The rate for cardiovascular drugs (BNF chapter 2) was over 13.1 prescriptions per person per year; over 5 per person per year for central nervous system drugs (chapter 4); 2.9 per person per year for gastro-intestinal drugs (chapter 1); and 1.9 prescriptions per person per year each for respiratory (chapter 3) and 1.5 prescriptions per person per year for skin preparations (chapter 13).
- Prescribing rates increased by five year ageband overall but the pattern was not always linear and varied between different BNF chapters. For example, rates for cardiovascular drugs were highest in patients age 85 to 89 years; rates for respiratory drugs were highest for patients aged 75 to 79 years; rates for central nervous system drugs were highest in patients aged 90 as were rates for prescribing for drugs affecting the gastro-intestinal system and 7 other BNF chapters. This is probably explained by levels of morbidity which are higher in the elderly.
- The inter-practice variation appears to be modest (the ratio of the 75th centile to the 25th centile is mainly under 1.5) and as predicted
- The comparison to Key Health Statistics in 1998 and PACT in 2002 demonstrates the accuracy and completeness of the QRSEARCH dataset

3 SPECIFICATION

“We would like to know how many older people are taking drugs from each therapeutic group, by age, for some fairly broad definition of therapeutic group, for example BNF chapter (see Table 3a-e), and also the use of appliances (for example by pseudo BNF chapter, see spreadsheet for explanation). For the most prescribed chapters we would appreciate a breakdown into smaller therapeutic groups, eg BNF Sections.

We are particularly interested in mental health drug use among older people, so we would appreciate a finer breakdown for these drugs, at a level corresponding to that of BNF section or even paragraph (see Table 3f-j). We are particularly interested in hypnotics

and anxiolytics (especially benzodiazapines), antipsychotic drugs, antidepressants and drugs for dementia. For these last therapeutic groups we would be very interested if an estimate could be made of the distribution of the length of time for which a patient uses these drugs.

4 OBJECTIVES FOR THIS REPORT

Objective 1 To determine the prescribing rates per 1,000 patient years and per 1,000 treated patient years by age and BNF chapter for 2002 and for the previous 5 years.

Objective 2 To measure of variation between practices in prescribing by BNF chapter.

5 METHOD

We conducted these analyses using the pilot version of the QRESEARCH database that contains data on 43 practices. The data were downloaded from the practices on 23 October 2003. In undertaking the analyses we needed to address issues concerning the allocation of some drugs to the most appropriate BNF chapter; the use of Read or drug codes; and the denominators and numerators to be used.

5.1 Prescribing by BNF chapter

Some preparations, for example aspirin, appear in more than one part of the BNF (sections 2.9, 4.7.1 and 10.1.1). We have assigned individual preparations to the same part of the BNF as the Prescription Pricing Authority (PPA), where possible. In the case of aspirin, we have assigned all 75mg and some 300mg tablets to section 2.9 (antiplatelet drugs), and the remainder, to section 4.7.1 (non-opioid analgesics), in the same manner as the PPA.

In addition, some GPs may record some treatments using a Read code, rather than as a prescription issued, for example, when vaccinating against influenza. In these cases a Read coded entry will appear in the *observations* table, but there will be no record of a prescription issued in the *medication* table. Treatments recorded in this way are not addressed in the present analysis, so some types of drugs issued will be undercounted.

5.2 Numerators for rates

Each item prescribed is listed separately in the database. For example, if a prescription contained 5mg and 10mg tablets of a particular drug, this is regarded as two prescription items. The numerator for prescribing rates is the total number of prescription items issued in the analysis year, by BNF chapter.

5.3 Denominators for rates

We have used two denominators to derive two different rates, as requested:

(a) Patient years at risk for registered population.

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

(b) Treated patient years at risk for registered population.

This is the same as patient years at risk, but includes only those patients who received one or more prescription items in the year.

6 COMPARATIVE DATA

PACT data for items prescribed by general practices and dispensed in the community, England 2002. This was supplied on 19 April 2004. We produced a prescribing rate for each BNF chapter using the number of prescription items issued and the ONS mid-year population estimate for England.

Key Health Statistics from General Practice 1998. Office for National Statistics, Series MB6 no. 2. Table 5C1 in this publication shows prescribing rates by BNF chapter for males and females. We have aggregated the data in this table to produce single rates for both sexes combined.

7 RESULTS

Table 1 shows the prescribing rate per 1,000 patient years for all patients aged 60 years and over by BNF chapter in 2002

As expected, the cardiovascular chapter is the most commonly prescribed, with the central nervous system, gastro-intestinal and respiratory chapters the next most commonly prescribed. The rate for cardiovascular drugs (BNF chapter 2) was over 13.2 prescriptions per person per year; 5.3 per person per year for central nervous system drugs (chapter 4); 2.9 per person per year for gastro-intestinal drugs (chapter 1); and 1.9 prescriptions per person per year for respiratory (chapter 3) and 1.5 prescriptions per person per year for skin preparations (chapter 13).

Table 1 the prescribing rate per 1,000 patient years for all patients aged 60 years and over by BNF chapter, 2002.

BNF Chapter	Rate per 1000 patient years for all ages 60+
1. Gastro-intestinal system	2865
2. Cardiovascular system	13,185
3. Respiratory system	1,965
4. Central nervous system	5,266
5. Infections	973
6. Endocrine system	2,604
7. Obstetrics, gynaecology, & urinary-tract disorders	344
8. Malignant disease & immunosuppression	200
9. Nutrition & blood	764
10. Musculoskeletal & joint diseases	1,509
11. Eye	932
12. Ear, nose & oropharynx	280
13. Skin	1,472
14. Immunological products & vaccines	230
15. Anaesthesia	8
19. Other drugs and preparations	10
20. Dressings	82
21. Appliances	65
22. Incontinence appliances	85
23. Stoma appliances	119

Table 2 shows the prescribing rate per 1,000 patient-years by age (five year bands from 60 to 89, and then all aged 90 or over grouped) and BNF chapter.

Prescribing rates increased by five year ageband overall but the pattern was not always linear and varied between different BNF chapters. For example, rates for cardiovascular drugs were highest in patients age 85 to 89 years; rate for respiratory drugs were highest for patients aged 75 to 79 years; rates for central nervous system drugs were highest in patients aged 90 as were rates for prescribing for drugs affecting the gastro-intestinal system and 7 other BNF chapters. This is probably explained by levels of morbidity which are higher in the elderly.

Table 2 Prescribing rate (prescription items) per 1000 patient-years at risk in 43 practices by BNF chapter, 2002

BNF Chapter*	60 to 64	65 to 69	70 to 74	75 to 79	80 to 84	85 to 89	90+
1. Gastro-intestinal system	1,622	2,150	2,748	3,385	4,114	4,915	5,679
2. Cardiovascular system	8,210	11,365	14,373	16,026	17,556	17,626	14,985
3. Respiratory system	1,646	1,945	2,089	2,353	2,148	1,868	1,360
4. Central nervous system	3,597	4,175	4,932	6,002	7,396	8,330	8,431
5. Infections	730	843	956	1,088	1,222	1,311	1,462
6. Endocrine system	2,242	2,623	2,744	2,890	2,834	2,619	2,060
7. Obstetrics, gynaecology, & urinary-tract disorders	262	328	334	385	451	411	372
8. Malignant disease & immunosuppression	135	175	189	246	244	313	272
9. Nutrition & blood	333	429	593	949	1,206	1,774	2,366
10. Musculoskeletal & joint diseases	1,238	1,453	1,552	1,665	1,726	1,736	1,550
11. Eye	391	605	901	1,176	1,492	1,877	1,906
12. Ear, nose & oropharynx	246	299	323	310	270	217	182
13. Skin	775	1,083	1,321	1,731	2,096	2,721	3,667
14. Immunological products & vaccines	140	252	273	275	255	227	198
15. Anaesthesia	7	9	9	11	7	7	6
19. Other drugs and preparations	6	10	11	6	7	29	22
20. Dressings	26	50	65	90	131	212	291
21. Appliances	22	49	55	88	99	128	155
22. Incontinence appliances	33	39	57	108	147	262	219
23. Stoma appliances	79	113	79	125	176	212	235

Source: QRESEARCH pilot database

* Chapters 19-23 are the pseudo chapters used by the Prescription Pricing Authority.

Table 3 shows inter-practice variation in the prescribing rate per 1000 patient-years by age and BNF chapter.

Table 3 Inter-practice variation in prescribing (prescription items) per 1000 patient years in QRESEARCH pilot practices, by BNF chapter, people aged 60 and over, 2002

BNF Chapter*	Median	P25¶	P75¶	P75:P25 ratio	Total patient-years at risk
1. Gastro-intestinal system	2,655	2,493	3,166	1.3	55,835
2. Cardiovascular system	12,837	10,764	15,761	1.5	55,835
3. Respiratory system	1,988	1,617	2,371	1.5	55,835
4. Central nervous system	5,085	4,683	6,163	1.3	55,835
5. Infections	966	850	1,184	1.4	55,835
6. Endocrine system	2,690	2,140	3,109	1.5	55,835
7. Obstetrics, gynaecology, & urinary-tract disorders	320	275	390	1.4	55,835
8. Malignant disease & immunosuppression	188	130	223	1.7	55,835
9. Nutrition & blood	788	656	945	1.4	55,835
10. Musculoskeletal & joint diseases	1,456	1,299	1,716	1.3	55,835
11. Eye	917	799	997	1.2	55,835
12. Ear, nose & oropharynx	285	231	331	1.4	55,835
13. Skin	1,541	1,232	1,732	1.4	55,835
14. Immunological products & vaccines	53	8	620	77.5	55,835
15. Anaesthesia	4	2	11	5.5	55,835
19. Other drugs and preparations	6	2	16	8.0	55,835
20. Dressings	67	50	93	1.9	55,835
21. Appliances	68	48	78	1.6	55,835
22. Incontinence appliances	80	53	118	2.2	55,835
23. Stoma appliances	118	79	160	2.0	55,835

Source: QRESEARCH pilot database

*Chapters 19-23 are the pseudo chapters used by the Prescription Pricing Authority.

¶ practices on the 25th and 75th centiles

By and large the inter-practice variation is not great. The P75:P25 ratio is under 1.5 for the main chapters except Chapter 8 where it reaches 1.7. Chapter 14, immunological products and vaccines, presents an issue due to recording of immunisations (see discussion). In Chapters 15 to 23 the numbers of prescriptions per 1,000 patient years are low and the P75:P25 ratio would not be expected to be valuable.

Table 4 looks at the comparator date. For 1998 the comparison to key Health Statistics suggests a trend towards marginally less recorded prescribing in QRESEARCH than GPRD. In the 2002 the comparison is against PACT data and QRESEARCH should be inflated by “non cashed” prescriptions – and this does seem to be the case.

Table 4: comparison of GRPD, QRESEARCH, PACT

BNF chapter	Prescription rate, all ages			
	Key Health Statistics from General Practice 1998	QRESEARCH 1998	PACT for England 2002	QRESEARCH 2002
	Prescription items issued per 1,000 patient years at risk	Prescription items issued per 1,000 patient years at risk	Prescription items prescribed by general practices and dispensed in the community per 1,000 persons	Prescription items issued per 1,000 patient years at risk
	1998	1998	2002	2002
1. Gastro-intestinal system	837	777	946	925
2. Cardiovascular system	2,185	2,148	3,265	3,542
3. Respiratory system	962	848	1,016	1,043
4. Central nervous system	1,887	1,768	2,248	2,171
5. Infections	760	675	754	641
6. Endocrine system	666	626	954	969
7. Obstetrics, gynaecology, & urinary-tract disorders	222	249	298	325
8. Malignant disease & immunosuppression	58	52	72	69
9. Nutrition & blood	258	211	347	271
10. Musculoskeletal & joint diseases	525	503	569	584
11. Eye	250	244	285	288
12. Ear, nose & oropharynx	174	139	181	157
13. Skin	637	703	692	725
14. Immunological products & vaccines	n/a	102	254	92

8 DISCUSSION

This is the third analysis of prescribing in older people and the more detailed work in the specification will follow. However, as a broad overview this report offers some good insight into the value of QRESEARCH and into prescribing in older people.

In 2002, the QRESEARCH pilot database contained 55,835 patient years for registered patients over the age of 59 years. Over the population, the average number of prescriptions was 32,958 per 1,000 patient years in 2002, or just under 3 prescriptions per month.

The inter-practice variation (Table 3) appears to be modest and as predicted. There is an issue around chapter 14 – immunological products and vaccines – and this wide variation will reflect differences between prescribing policy in different locations. Some practices are supplied with vaccines and only record them as Read codes (not included in this analysis) while others prescribe each vaccine.

The comparison to the Key Health Statistics in 1998 is reassuring. Although QRESEARCH appears to generally under-report prescribing for that year, the difference is not consistent and the rates are remarkably similar. Equally, the 2002 comparison with PACT shows QRESEARCH generally reporting higher rates (as would be expected since it uses drugs prescribing not drugs dispensed) but the rates are reassuringly similar.