ARTICLE

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THE ECONOMIC BURDEN OF MINOR AILMENTS ON THE NATIONAL HEALTH SERVICE (NHS) IN THE UK

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ABSTRACT

BACKGROUND: The UK population often consults General Practitioners (GPs) rather than pursuing self care for minor ailments (MAs). The associated costs of this behaviour have not been quantified.

OBJECTIVES: To assess the NHS resource consumed in GP consultations for MAs, and the cost of associated prescriptions.

METHODS: In July 2007 records of a MA (defined using Read codes) in the prior 24 months were extracted from a database of de-identified, longitudinal patient records from130 UK general practices. Consultations were divided into those for a MA alone, and those for a MA with another condition. Cost of prescriptions issued was calculated from the quantity and product/form/strength prescribed and the NHS unit price.

RESULTS: Of the 57 million consultations examined, 51.4m (90%) were for MAs alone (the balance included discussion of another condition) and 88% were for conditions judged suitable for self care and thus potentially 'transferable'. Ten MAs accounted for 75% of all consultations. In 90% of consultations the patient received a prescription, accounting for £371m of the estimated total £2bn NHS resource spent annually on GP MA consultations.

CONCLUSIONS: The treatment of MAs within primary care accounts for 20% of total available GP workload. These data suggest that most people consult specifically for MAs and not as part of a consultation for a more serious condition. Greater self care of MAs could provide substantial healthcare savings and potential benefits for GPs and patients.

Key words: Minor ailments, primary care, anonymised patient level data, Disease Analyzer, MediPlus

INTRODUCTION

Previous consumer surveys of the UK population have noted a GP 'dependency culture', in which people consult their doctor for even minor medical conditions[1]. Conversely, it is widely acknowledged that the potential for other resources, in particular Community Pharmacies, to make a greater contribution to self care for minor ailments is not fully exploited in the

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UK. A previous study examining the factors influencing consumer choice in the management of minor illness found that when presented with the options, people preferred to manage symptoms by self care, and that community pharmacy was the preferred source of advice for this purpose[2]. The NHS resource that could be saved if self care for minor ailments replaced GP consultations has not been quantified previously.

Defining the prevalence of minor ailments and capturing data relating to their treatment is difficult because an agreed definition is lacking. One approach previously adopted in the UK is to consider as a minor ailment any condition which has a suitable self medication product available for purchase and self care[1]. This pragmatic approach has limitations, principally the difficulty in distinguishing between a condition which is truly 'minor' in nature (and thus suitable for self care) and one which appears to be minor but on subsequent assessment proves to be a symptomatic manifestation of a more serious condition. One possible approach to this problem in a primary care setting is to validate the term 'minor ailment', by considering the outcome after assessment by a GP: those consultations which lead to no prescription or to the prescription of a product which is analogous to one which is available to be purchased for self care, can be more reliably assumed to be due to a minor ailment.

This study aimed to provide evidence of the amount of GP time spent in relation to minor ailments (MAs) refined 'post hoc' in this way, in order to estimate the resource that could potentially be saved by adopting self-medication for these conditions. The study also aimed to estimate the savings that could result from a reduction in GP prescriptions for minor ailments as a result of appropriate substitution of self-medication.

MATERIALS AND METHODS

DATA SOURCE

Disease Analyzer (formerly MediPlus) is a UK primary care database managed by IMS Health which provides de-identified longitudinal patient records from around 130 general practices. The MediPlus database has previously been validated and found to be accurate and reliable[3,4]. At the time of the study (July 2007), there was a cumulative total of approximately 4 million unique patients that had ever had records in the database.

There is a good correlation between the database population and the UK population in terms of age distribution and male-to-female ratio. The panel of GP practices is broadly representative of those serving the UK population, although there is under-representation of smaller practices and of practices in Scotland and Northern Ireland, and a slight over-representation of younger doctors.

Date-stamped records available for analysis in Disease Analyzer (DA) include: diagnoses by Read code[5] (mapped to ICD10); prescriptions (captured as written, including dosage information and linkage to diagnosis) and cost of prescriptions; test results and referrals, as well as patient demographics (age based on year of birth, and sex).

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ANALYSIS

Patients in the July 2007 update of the Disease Analyzer database who had a 'problem record' of a minor ailment (see Table 1 below) in the 24 months prior to the end of the database (1 August 2005 – 31 July 2007) were selected and their data exported for further analysis using SAS software.

For each year of the study period (1 August 2005 – 31 July 2006 and 1 August 2006 – 31 July 2007), the number of consultations and prescriptions and the cost of those prescriptions was reported by minor ailment, split by patient sex and age. The following age bands were used: 0-15, 16-18, 19, 20-29, 30-39, 40-49, 50-59, 60-69, 70-79, 80-89, 90-99, 100+.

A consultation was defined as a record of a minor ailment problem (with or without a linked prescription). If more than one type of minor ailment occurred on a particular day for a patient, they were reported as separate consultations. Consultations were broken down into those that were for a defined minor ailment alone, or for a minor ailment as well as something else. Prescriptions were analysed at therapy class level - European Pharmaceutical Market Research Association (EphMRA) Anatomical Therapeutic Classification level 3 - as well as by product and strength. Cost per prescription was calculated with reference to the product/form/strength prescribed, using the quantity prescribed (e.g. number of tablets) and the NHS price per unit.

MINOR AILMENTS DEFINITION

There was no standard definition in the literature for minor ailments and therefore a pragmatic approach was taken to provide a list of conditions considered to qualify for this term. A condition was considered a 'minor ailment' if it was listed in existing minor ailment schemes (e.g. the Scottish Minor Ailment Scheme[6]) or was a condition for which marketed self medications were listed in the 'Over the Counter Directory' published by The Proprietary Association of Great Britain (PAGB)[7]. Conditions defined as minor ailments for the purpose of this study are listed in Table 1, grouped by the categories employed in the PAGB 'Medicine Chest' website[7].

Minor ailments were searched for using Read level 4/5 codes. The database was searched for all consultations in the study period for the defined conditions, and linked prescriptions.

For many of the minor ailments listed, a more severe presentation of the condition might be considered not to be minor and therefore not transferable to self care. Such conditions include: back pain, heartburn, indigestion and eczema. In an attempt to adjust for this, the prescriptions issued for every minor ailment consultation were examined. Based on the molecule and strength of each item prescribed for the condition, the percentage of consultations that could be reasonably considered 'transferable' to self-medication was estimated by a pharmacist and then this percentage was validated by staff from both PAGB and Pharmaceutical Services Negotiating Committee (PSNC). For example, where a very strong (e.g. a narcotic) pain killer was prescribed for back pain, 0% of consultations were considered to be transferable.

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Table 1: Conditions considered 'Minor Ailments'

All Skin and Scalp Symptoms	Eczema and dermatitis Psoriasis Acne Athlete's foot Fungal nail infections Nappy rash Cradle Cap Dandruff Head lice Insect bites and stings Verrucas and warts
Eye Ear and Mouth Symptoms	Conjunctivitis Cold sores Mouth ulcers Oral thrush Gingivitis Teething
All Cough Cold and Flu Symptoms	Colds Flu Coughs Sore throat
All Allergy /Hay Fever Symptoms	Hay fever Nasal congestion
All Stomach Symptoms	Heartburn and indigestion Infantile colic (0-2yrs)
All Bowel Symptoms	Constipation Diarrhoea Haemorrhoids Threadworm
All Urinary / Gynaecological Symptoms	Thrush (in addition, where thrush was not mentioned, but an antifungal was prescribed for vaginal discharge, this was also counted as a thrush consultation) Cystitis
All Pain Symptoms	Headache Dysmenorrhoea pain Migraine pain Muscular pain Earache (excluded consultations where antibiotic given) Back pain Sprains Strains
All Sleep Travel and Smoking Symptoms	Travel sickness

PATIENT SEGMENTATION

We recognised that certain segments of the population would be less likely to make use of self-medications purchased in pharmacy, and that for others it might not be appropriate. We therefore segmented the population in the Disease Analyzer database into a number of groups:

1. People in categories that receive NHS prescriptions free of charge.

   IMS Disease Analyzer does not record whether people in the database receive free prescriptions. However it is possible to use the database to identify many of those

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patients who by virtue of their age or condition could receive their prescriptions free of charge.

We made the following assumptions:

a) All people with a condition that entitles them to a free prescription were assumed to be receiving free prescriptions even though not all would have had a valid exemption certificate.

b) Young people aged 16-18 were split out as a separate group. The proportion of 16-18 year olds in full time education was assumed to be 77.3% (Department for Children, Schools and Families, 2006[8] - this figure relates to England only, [but was assumed to be representative of the total UK population]). The prescriptions relating to these individuals are free and therefore only 22.7% of consultation and prescription costs for 16-18 year olds were potentially transferable.

c) There is no reliable information on income recorded in the DA database. The proportion of the eligible population on Income Support was assumed to be 11.5% and the proportion of the eligible population on Job-seeker's Allowance was assumed to be 5.4% (Office for National Statistics, 2003[9]). The prescriptions relating to these individuals are free and therefore 83.1% - 88.5% of consultation and prescription costs were potentially transferable. This range was driven by the assumption that in the worst case, all individuals on Job-seeker's Allowance were also receiving Income Support, and in the best case the two populations were mutually exclusive.

It was also assumed that any patient under 16 or aged 60 or over was entitled to free prescriptions. Consultations for patients aged 16-18, and those aged 19-59 who were entitled to free prescriptions because they had one of the conditions listed as exempt from prescription charges, were reported by minor ailment for each year.

2. People who consult for a minor ailment at the same time as another condition.

In some cases people will ask to be treated for a minor ailment at the same time as a more serious disease. It was felt that such consultations would be unlikely to be diverted into pharmacy and self medication. Consultations for a minor ailment at the same time as a non–minor condition were therefore analysed as a separate group.

DATA PROJECTION

Results were projected to national estimates. The projection factor was calculated by dividing the number of live people in the UK (source: National Census data[10]) by the number of live people registered in the DA database. This determines the proportion of the national population covered by the practices in the DA sample. There is an underlying assumption

that those practices have always covered the same proportion of the population as they did at the time of the study.

Evaluation of the cost of consultations for minor ailments was based on the assumption that the majority of home visits would not be for minor ailments, and the average cost of a consultation was assumed to be £2.50 per minute (Personal Social Services Research Unit PSSRU, 2006[11] - the PSSRU consider the cost of telephone consultations to be the same as in-surgery consultations). This was multiplied by the assumed average length of a consultation, 11.7 minutes (Information Centre for Health and Social Services, 2006/07[12]), to calculate the average cost of a consultation: £29.25. This figure was then multiplied by the number of minor ailment consultations obtained from the Disease Analyzer data to obtain the total cost of minor ailment consultations.

RESULTS

Examining data from IMS 'Disease Analyzer', and applying it to the whole UK population, results in an estimation that 57 million GP consultations a year (or 220,000 consultations per day) involve MAs.

Of these 57m consultations, 51.4m (90%) are recorded as being for MAs alone – the balance of 5.6m are consultations that involve discussions about a MA and a more serious condition. In 51.9 million MA consultations annually a prescription is issued, attracting direct costs of £367.9 million.

Table 2: Minor Ailments (MAs) by Number of Consultations (per year)

MA	Total Consultations (millions)
Back Pain	8.4
Dermatitis	6.8
Heartburn and indigestion	6.8
Nasal Congestion	5.3
Constipation	4.3
Migraine	2.7
Cough	2.6
Acne	2.4
Sprains and Strains	2.2
Headache	1.8
Earache	1.7
Psoriasis	1.7
Conjunctivitis	1.3
Sore Throat	1.2
Diarrhoea	1.2
Haemorrhoids	0.9
Cystitis	0.7
Hay Fever	0.7
Warts and Verrucas	0.6
Nail Infections	0.4
Common Cold	0.4
Influenza	0.3
Dysmenorrhoea	0.3
Thrush	0.3
Infantile Colic	0.2
Insect bites	0.2
Mouth Ulcers	0.2
Athletes Foot	0.2
Muscular Pain	0.2
Oral Thrush	0.2
Threadworm	0.1
Nappy Rash	0.1
Head Lice	0.1
Gingivitis	0.04
Dandruff	0.04
Cold Sores	0.04
Travel Sickness	0.02
Teething	0.02

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Ten conditions (Table 2) account for 75% of all MA consultations and back pain alone accounts for almost 8.5m visits.

Table 3: Annual Consultations and NHS Prescription (Rx) Costs of Minor Ailments (MAs)

MA	Total Rx cost (millions)	Total Rx (millions)	Average Rx cost	Total consultations (millions)
Back Pain	£64.0	7.8	£8.23	8.4
Heartburn and indigestion	£54.0	6.7	£8.07	6.8
Migraine	£51.9	2.6	£19.68	2.7
Dermatitis	£35.3	6.7	£5.30	6.8
Acne	£25.7	2.3	£10.96	2.4
Psoriasis	£22.2	1.6	£13.70	1.7
Constipation	£22.2	4.2	£5.31	4.3
Nasal Congestion	£17.4	5.2	£3.36	5.3
Sprains and Strains	£12.1	1.8	£6.86	2.2
Headache	£11.7	1.5	£8.03	1.8
Cough	£9.0	2.2	£4.18	2.6
Nail Infections	£4.7	0.4	£12.92	0.4
Haemorrhoids	£4.6	0.8	£5.59	0.9
Diarrhoea	£4.4	0.8	£5.25	1.2
Cystitis	£3.6	0.7	£5.28	0.7
Sore Throat	£3.6	0.9	£3.91	1.2
Conjunctivitis	£3.4	1.2	£2.81	1.3
Earache	£3.3	1.2	£2.74	1.7
Hay Fever	£2.3	0.7	£3.37	0.7
Dysmenorrhoea	£2.3	0.3	£7.83	0.3
Thrush	£1.3	0.2	£5.73	0.3
Infantile Colic	£1.2	0.2	£6.51	0.2
Common Cold	£1.1	0.3	£3.18	0.4
Muscular Pain	£1.0	0.1	£6.78	0.2
Athlete's Foot	£0.9	0.2	£5.22	0.2
Warts and Verrucas	£0.9	0.3	£3.47	0.6
Influenza	£0.8	0.2	£3.56	0.3
Insect bites	£0.6	0.1	£4.61	0.2
Mouth Ulcers	£0.5	0.2	£3.28	0.2
Oral Thrush	£0.5	0.2	£3.04	0.2
Head Lice	£0.3	0.1	£3.97	0.1
Nappy Rash	£0.3	0.1	£3.06	0.1
Cold Sores	£0.2	0.03	£6.67	0.04
Dandruff	£0.2	0.04	£4.97	0.04
Threadworm	£0.1	0.1	£1.51	0.1
Gingivitis	£0.1	0.04	£2.86	0.04
Cradle Cap	£0.1	0.02	£4.59	0.02
Travel Sickness	£0.1	0.02	£4.49	0.02
Teething	£0.02	0.01	£1.82	0.02

The high average Rx cost for headaches is due to prescribing of triptans under "headache" consultations, and significant use of more expensive formulations of common generic ingredients.

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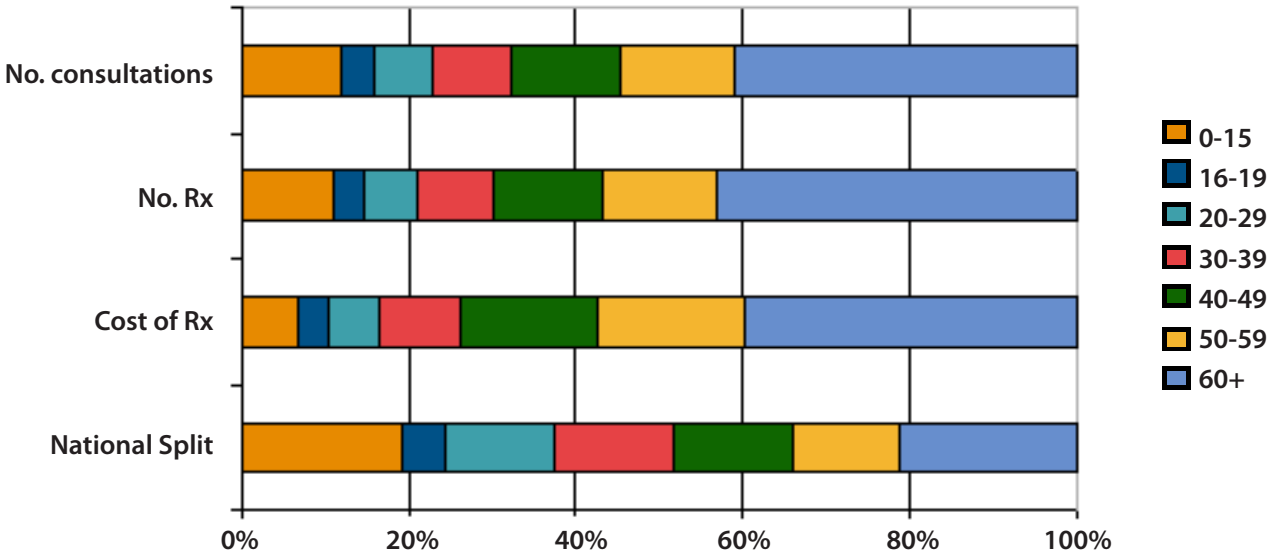
The ten MAs with most consultations are also broadly responsible for the greatest cost to the NHS in terms of prescription charges. This arises because in 90% of all MA consultations the patient is issued with a prescription and the average prescription cost associated with these ten MAs is higher than the average for the whole group of MAs. Table 3 shows the prescription costs that are attributable to each minor ailment.

DEMOGRAPHICS OF MA CONSULTATIONS AND PRESCRIPTIONS

The number of MA consultations and prescriptions broadly reflects national age demographics. NHS resource spent on MAs in general practice increases above 40yrs and the elderly population (>60 years) are over-represented, whilst the young (0-15 year olds) are under-represented (Figure 1).

Figure 1: Minor Ailment (MA) Consultations and Prescriptions (Rx) by Age



(National age profile from Office for National Statistics mid-2006 population estimates[13])

While the UK population split by gender is close to 50/50 (%) (mid-2006), females account for almost exactly 60% of both MA consultations and prescriptions and therefore the same proportion of costs.

TOTAL COST OF MAS

We estimate the total burden on NHS budgets of MA treatments in 2007 as just over £2 billion.

Over £1,800 million of NHS resource annually was spent on MA-only GP consultations and close to £200m on MA consultations in which a more serious condition was also discussed (Table 4). The scope for potential savings in relation to MA consultations was

greatest within GPs' time/consultation costs; only 18% (£337.2m) of NHS resource spent on GP 'minor ailment alone' consultations was the cost of prescriptions.

Table 4: Estimated Total Cost of Minor Ailments (MAs) in 2007

Consultation Type	Consultation cost (millions)	Rx cost (millions)	Total cost (millions)
MA alone	£1,502.4	£337.2	£1,839.6
MA & other	£153.7	£34.2	£188.0
Total MA	£1,656.1	£371.4	£2,027.6

POTENTIAL SAVINGS

An examination of the nature of prescriptions issued for MA's estimates that a high proportion of the MA GP consultation workload can be considered as potentially transferable– i.e. suitable for self care. Table 5 presents 20 conditions selected to illustrate the varying proportion of cost estimated as 'saveable'. For some MAs, 100% savings are considered to be theoretically possible because in these cases GPs are issuing prescriptions which are readily transferable to an equivalent self-medication substitute.

Through considering each MA category and applying assumptions as to what percentage of consultations could be saved, the total potential cost saving is reduced by 12% to £1,600m (from a theoretical maximum of £1,800m). Conversely, it may be possible to

Table 5: Estimated Potential Savings on Selected Minor Ailments (MAs)

MA	Consultation cost (millions)	Rx cost (millions)	% saveable
Headache	£47.2	£10.5	95
Heartburn and indigestion	£184.7	£50.3	100
Infantile Colic	£5.5	£1.1	100
Influenza	£8.2	£0.7	90
Insect bites	£5.0	£0.6	100
Migraine	£74.0	£48.4	80
Mouth Ulcers	£4.7	£0.4	100
Muscular Pain	£4.4	£0.9	100
Nail Infections	£10.5	£4.0	100
Nappy Rash	£2.6	£0.2	100
Nasal Congestion	£142.1	£16.0	100
Oral Thrush	£4.1	£0.4	100
Psoriasis	£44.4	£20.4	30
Sore Throat	£31.3	£3.2	35
Sprains and Strains	£60.0	£11.1	100
Teething	£0.5	£0.0	100
Threadworm	£2.9	£0.1	100
Thrush	£7.8	£1.2	100
Travel Sickness	£0.6	£0.1	100
Warts and Verrucas	£14.2	£0.7	70

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save a similar proportion of the prescription costs where an MA consultation is combined with another condition. This would then add £30m to the potential savings.

DISCUSSION

This study estimates the total annual economic burden resulting from the treatment of minor ailments by General Practitioners in the UK to be £2,028 million, with consultation costs accounting for £1,656 million of this and the balance representing cost of prescriptions to the NHS. All but 12% of these consultation costs are judged to be 'saveable' since the consultation resulted in no prescription (in 10%) or a prescription for a medicine for which a direct self medication equivalent is available for purchase.

This is the first study to attempt an estimate of the resources consumed within the National Health Service by patients consulting doctors for conditions that are likely to be manageable by self care. The IMS Disease Analyzer database is large and representative of both the population demographics, and broadly the nature of General Practices in the UK. It is therefore reasonable to extrapolate from this data source to obtain national estimates of cost and potential savings.

The estimate of minor ailment consultations in this study may be conservative. Where a patient presents with a more serious condition as well as a minor ailment, the GP may not always enter the minor ailment onto their computer, especially where no prescription was issued. Where this is the case, Disease Analyzer would not pick up the minor ailment consultation. Since the consultation for the other condition would have taken place in any case, and there would be, in all likelihood, no prescription for the minor ailment, the additional burden to the NHS of these "missed" minor ailment consultations would be minimal. However, the great majority (90%) of consultations for minor ailments have that condition as the primary reason for the visit. As a result, the figures outlined in this study may be taken as a reasonable minimum estimation of the burden of minor ailments on the NHS.

The definition of 'minor ailment' in this analysis was a pragmatic one based on the conditions that have an appropriate self medication product available for self care. This necessarily arbitrary definition encompasses conditions that may have a range of severity, which in some cases may justify consultation with a doctor. For this reason we also examined the nature of the prescriptions issued in the consultations to see if these reflected greater severity e.g. by a preponderance of 'prescription only' or stronger formulations of medicines. A pharmacist observer decided what proportion of consultations would be transferable to self care on this basis, and the judgement was reviewed by other observers. However applying this correction, with the possible introduction of bias that it represents, reduces the estimated total cost saving by only 12%.

The putative savings estimated in this study would be achievable only if patients consulting

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a pharmacist (where the cost of the consultation to the NHS is essentially zero) were sufficiently satisfied with the outcome that they did not present subsequently to their GP. Previous work suggests that consumers prefer to manage minor illness with self care[2] and a recently published survey of consumer and healthcare professional beliefs and behaviour[14], suggests that consumers tend to return to self care for repeated episodes of minor illness. This suggests that some savings resulting from substitution of self care would be repeated in subsequent years.

The estimate of cost associated with GP time during minor ailment consultations assumes that they conform to the average consultation length. While it is possible that MA consultations may on average be shorter than 'other' consultations, there is currently no evidence available to support this. This is an area for further investigation.

This study estimates that total consultations for MAs account for approximately 20% of the total available GP workload in the UK. Aside from the potential for substantial cost savings, holding fewer MA consultations would enable UK GPs to spend greater time on more complex clinical conditions, with the prospect for better patient outcomes[15].

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REFERENCES

1. Every Day Healthcare 1997 (Pagb.co.uk/information/research/html#tns) Accessed August 12th 2010
2. Porteous T, Ryan M, Bond CM, Hannaford P. Preferences for self-care or professional advice for minor illness: a discrete choice experiment. Br J GenPract. 2006 Dec;56(533):911-7.
3. Lawrenson R, Williams T, Farmer R. Clinical information for research; the use of general practice databases. J Pub Health Med 1999;21:299–304.
4. Lawrenson RA, Coles G, Walton K, Farmer RDT. Characteristics of practices contributing to the MediPlus database and the implications for its use in epidemiological research. J Inform Prim Care 1998;1:14–8.
5. Read Codes available at http://www.primarycarecontracting.nhs.uk/145.php Accessed August 12th 2010
6. The Scottish Minor Ailments Scheme: http://www.communitypharmacyscotland.org.uk/nhs_care_services/minor_ailment_service/minor_ailment_service.asp Accessed August 12th 2010
7. PAGB (2007). OTC Directory 2007/08 The 'OTC Directory'(PAGB): The Directory includes details of OTC products, updated annually and is mailed to GPs and other healthcare professional groups across the UK. Current Online version: http://www.medicinechestonline.com/. Accessed August 12th 2010
8. Number of 16-18 year olds in full time education: http://www.dcsf.gov.uk/rsgateway/DB/SFR/s000849/index.shtml Accessed August 12th 2010
9. Proportion of population on income support and job seekers allowance: http://www.statistics.gov.uk/CCI/nugget.asp?ID=12 Accessed August 12th 2010

Accepted for publication 27 September 2010

10. Census population estimates: http://www.ons.gov.uk/census/index.html Accessed August 12th 2010

11. Personal Social Services Research Unit: Unit Costs of Health and Social Care 2006: http://www.pssru.ac.uk/uc/uc2006contents.htm Accessed August 12th 2010

12. Average length of a GP consultation: http://www.ic.nhs.uk/statistics-and-data-collections/primary-care/general-practice/gp-workload-survey Accessed August 12th 2010

13. National age profile 2006: http://www.statistics.gov.uk/statbase/product.asp?vlnk=15106 Accessed August 12th 2010

14. Banks I. Self Care of Minor Ailments: A Survey of Consumer and Healthcare Professional Beliefs and Behaviour. SelfCare 2010; 1:1-13

15. Wilson A, Childs S. The relationship between consultation length, process and outcomes in general practice: a systematic review. British Journal of General Practice, 2002; 52(485):1012-1020.

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