

# Estimating the burden of minor ailment consultations in general practices and emergency departments through retrospective review of routine data in North East Scotland

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## Abstract

**Background.** Minor ailment attendances in general practices and emergency departments (EDs) place significant burden on health care resources.

**Objectives.** To estimate the prevalence and type of minor ailment consultations for adults in general practice and ED that could be managed in a community pharmacy.

**Methods.** Retrospective review of routine data from general practices ( $n = 2$ ) and one ED in North East Scotland. Two independent consensus panels assessed each consultation summary to determine whether it represented a minor ailment. Outcomes included prevalence of consultations for minor ailments in general practice and ED and frequency of different minor ailment type that could be managed in community pharmacies.

**Results.** In total, of the 494 general practice and 550 ED consultations assessed, 13.2% [95% confidence interval (CI): 18.6–25.9%] and 5.3% (95% CI: 4.0–8.0%), respectively, were categorized as minor ailments suitable for management in community pharmacies. Consensus among panel members was moderate for general practice consultations, but fair to poor for ED consultations. Agreement between uni- and multi-disciplinary panels was good. Applied to national data, these estimates would equate to ~18 million general practice and 650 000 ED consultations that could be redirected to community pharmacy, equating to ~£1.1 billion in resources.

**Conclusion.** Minor ailment consultations still present a major burden on higher cost settings. Effective strategies are needed to raise awareness among patients and health professionals regarding conditions that can be managed effectively in pharmacies and to change patient health-seeking behaviour for such conditions.

**Key words.** Community pharmacy services, consensus, emergency departments, general practice.

## Introduction

The use of higher cost health care settings for minor ailments places a substantial burden on scarce National Health Service

(NHS) resources. Many people with minor ailments prefer self-care (1,2), but historically substantial numbers have presented to general practices or emergency departments (EDs) (3–5). Many

UK ED services are in crisis as attendances continue to rise (6,7). A 40% increase in general practice consultations has occurred since 1995 (8,9), 20% are estimated to be for minor ailments (9,10).

Strategies are required to reduce demand on general practices and EDs and increase capacity elsewhere within the health system, ensuring patients with minor ailments can access care appropriately. Attempts to divert minor ailments include nurse-led minor ailment clinics (11) and community pharmacy-based minor ailments schemes (12). The latter allow patients, exempt from paying prescription charges, to receive free advice and medicines from community pharmacies for specific minor ailments. Evidence suggests these schemes could re-direct cases away from general practices (13). Current evidence for diverting cases from EDs is lacking. Pharmacists in the UK can supply any Pharmacy Only (P) or General Sales List (GSL) medicines over-the-counter (OTC) or via minor ailment schemes for certain group of patients. These include treatments for common illnesses like dyspepsia, bacterial conjunctivitis, dysmenorrhea, acne and eczema (14). In addition, pharmacists can supply certain prescription-only medicines either through locally agreed protocols, i.e. patient group directions (15), or by supplementary and independent prescribing (16).

This 'exploratory' study aimed to determine the current prevalence of minor ailments presenting in general practices and EDs and to estimate the extent to which such ailments might be managed in community pharmacies. The definition of 'minor ailment' used was: 'common or self-limiting or uncomplicated conditions which can be diagnosed and managed without medical intervention' (13). This study was one component of a larger programme of work, the MINA study (Community Pharmacy Management of Minor Illness) (17). The specific objectives here were to estimate the prevalence and type of consultations for minor ailments among adults seeking care in general practice and ED. In addition, a *post hoc* costs analysis was undertaken to apply the estimates to national data to derive gross estimates of the annual number of consultations and associated costs occurring nationally for minor ailments in general practice and ED that could be treated in community pharmacies.

## Methods

### Design

Retrospective routine data review and two-stage consensus process.

### Setting

Routine data were obtained from two general practices (details in Table 1) and Aberdeen Royal Infirmary (ARI) in the Grampian Health Board Area, North East Scotland. The general practices were reflective of the population of Scottish general practices with similar spread of patients across the age groups. The list size of Practice 2 was substantially larger ( $n = 10\,654$  patients) than the national average ( $n = 5\,670$ ) (18). ARI is a large teaching hospital which annually has 65 000 new adult ( $\geq 18$  years of age) ED consultations (C Small, ED Information & Systems Manager, ARI, Aberdeen 2013, personal communication). The general practices were chosen on the basis that they were in the same geographical vicinity as the ED.

### Outcomes

The outcome measures were:

- Prevalence of consultations for minor ailments.
- Suitability of conditions for management in a community pharmacy.
- Frequency of 'types' of minor ailments.
- Estimates of the potential annual and national burden and costs.

### Routine data collection

For general practice data, an NHS Grampian eHealth facilitator used practice computer systems to identify all consultations for one working week (21–25 March 2012). All ED consultations from a normal working week (6–11 February 2012) were identified from the electronic ED Information System (EDIS) (due to ED data case card unavailability, data collection was not possible in the same week so the nearest week with data available was chosen). All consultations were anonymized and independently screened by two researchers against agreed selection criteria.

**Table 1.** Characteristics of general practices providing consultation data during the week 21–25 March 2012

	Practice 1		Practice 2	
	N = 5599		N = 10 454	
	% (n)		% (n)	
	Male	Female	Male	Female
Age bands (years)				
0–14	11.2 (628)	11.0 (615)	7.7 (802)	7.3 (759)
15–24	7.3 (406)	6.9 (389)	5.4 (563)	4.9 (511)
25–44	13.2 (741)	14.9 (836)	12.3 (1286)	12.1 (1267)
45–64	10.5 (590)	11.8 (661)	15.0 (1573)	15.5 (1616)
65–74	2.8 (154)	3.8 (211)	4.4 (457)	5.2 (539)
$\geq 75$	2.0 (112)	4.6 (256)	3.9 (411)	6.4 (670)
Total	2631 (47.0)	53.0 (2968)	48.7 (5092)	51.3 (5362)
Number of partners	6		7	
Location	Large urban area		Large urban area	
Deprivation (SIMD quintile)	1 (most deprived)		5 (least deprived)	
Distance to nearest community pharmacy (miles)	0.3		0.4	
Distance to nearest ED (miles)	1.2		2.2	

SIMD, Scottish Index of Multiple Deprivation.

### Inclusion criteria

Any face-to-face consultation involving an adult patient ( $\geq 18$  years), with a GP/practice nurse on general practice premises, or with ED staff, occurring 'in hours' (i.e. during typical community pharmacy opening hours, Monday to Saturday, 9 a.m. to 6 p.m.) was considered for inclusion.

Anonymized consultation summaries were created for included consultations by the research team and contained the presenting information (e.g. condition/symptom), age and sex, to reflect information available if the individual had chosen to present in a community pharmacy (Table 2).

### Exclusion criteria

Minor ailments are defined as 'common or self-limiting or uncomplicated conditions which can be diagnosed and managed without medical intervention' (13). General practice consultations which involved the following were therefore excluded: monitoring of substance misuse prescriptions, mental health reviews, contraceptive pill checks, attendance for technical procedures (e.g. injection, suturing), those requiring hospital admission after consultation, repeat prescribing where the patient was not in attendance, patients not registered at the practice, home visits or telephone reviews or reviews of existing chronic conditions. ED consultations were excluded if they involved: patients who died in the ED, patients admitted to hospital, patients who deliberately self-harmed, patients with fractures, follow-up presentations, those referred by GPs or those requiring technical procedures (e.g. suturing).

### Consensus exercise

Consultation summaries were independently scrutinized by one of two uni-disciplinary panels (general practice or ED) followed by a multi-disciplinary panel (Fig. 1).

### Uni-disciplinary panels

Consultations were assessed by relevant clinical experts, i.e. general practice consultations were assessed by a purposively selected uni-disciplinary panel of eight GPs from the University of Aberdeen's Centre of Academic Primary Care comprising five males and three females between 30 and 60 years of age with a range of experience. ED consultations were assessed by a purposively selected uni-disciplinary panel of five ED doctors, three male and two female, between 30 and 50 years of age, from ARI with between 5 and 10 years of emergency medicine experience.

Each uni-disciplinary panel member was sent (electronically or by post according to preference) the consultation summaries and, using the aforementioned definition of 'minor ailment', asked to

answer 'yes' or 'no' to two questions: (Q1) Was this consultation for a minor ailment? and (Q2) Could this consultation have been managed in a community pharmacy? Three possible assessments were returned:

1. minor ailment/manageable in a community pharmacy ('yes/yes') or
2. minor ailment/not manageable in a community pharmacy ('yes/no') or
3. not minor ailment/not manageable in a community pharmacy ('no/no').

Where panel members indicated indecision (e.g. indicated '?'), this was conservatively coded as 'no'.

While all eligible ED consultations were reviewed by the ED panel, the volume of eligible general practice consultation summaries meant that a two-stage process was adopted to reduce GP workload. A random selection of 25 consultation summaries was assessed by all eight panel members to determine their agreement. The remaining consultations were each assessed independently by two GPs.

All consultations assessed by the uni-disciplinary panels as 'yes/yes' (i.e. minor ailments/manageable in a community pharmacy) were independently classified by six multi-disciplinary research team members to determine the 'type' of minor ailment (e.g. 'ankle pain' was classed as musculoskeletal pain). The frequency of 'types' of ailment was calculated.

### Multi-disciplinary panel

To determine the external validity of the consensus exercise, the multi-disciplinary panel assessed a stratified random sub-sample of consultations (20 'yes/yes' and 10 'no/no' consultations) from each uni-disciplinary panel (60 consultations in total) using the same two questions. The panel was purposively selected to comprise one GP, one practice nurse, two community pharmacists, one ED consultant, one Emergency Nurse Practitioner and one lay member from each UK country (Scotland, England, Northern Ireland and Wales), i.e. 28 members in total. Members were invited to take part through contacts of the study team and, where necessary, using suggestions from relevant professional organizations. Members worked in variety of settings (urban/rural), ranged between 30 and 60 years of age and included 18 females and 10 males.

### Data handling and analysis

Data were entered into an SPSS (Version 20) database. For each consultation, the number of panel members indicating the consultation was or was not a minor ailment was calculated. For the random

**Table 2.** Examples of consultation summaries

Age	Sex	
36	Female	Children have had conjunctivitis, now 1-day history of red right eye discharge ++...
24	Female	Muscle strain; did a sit up 1 week ago, had a shooting pain in lower abdomen, since then intermittent discomfort moderate severity, when moves suddenly lasts 2–3 seconds, occurs when coughs or sneezes, or changes position. Movement related, tried paracetamol, as required, without benefit. Can wake at night if moves. No swelling noted. Opening bowels daily, last bowel opening this a.m., passing wind. Last menstrual period 17/3/11, normal period.
52	Male	Pain in right forefoot on dorsal surface for last week, no history of trauma, though was stood on years ago at a ceilidh (traditional Scottish dance event), is able to mobilize but pain worsens as he walks.
29	Female	Cough for 2 days was short of breath and tired yesterday a bit better today otherwise eating and drinking well and not fevered.
66	Female	Upper respiratory tract infection: for past 3 weeks – still slight redness in tonsils but no pus and chest clear; mood low with virus – now feeling better, so continuing treatment.

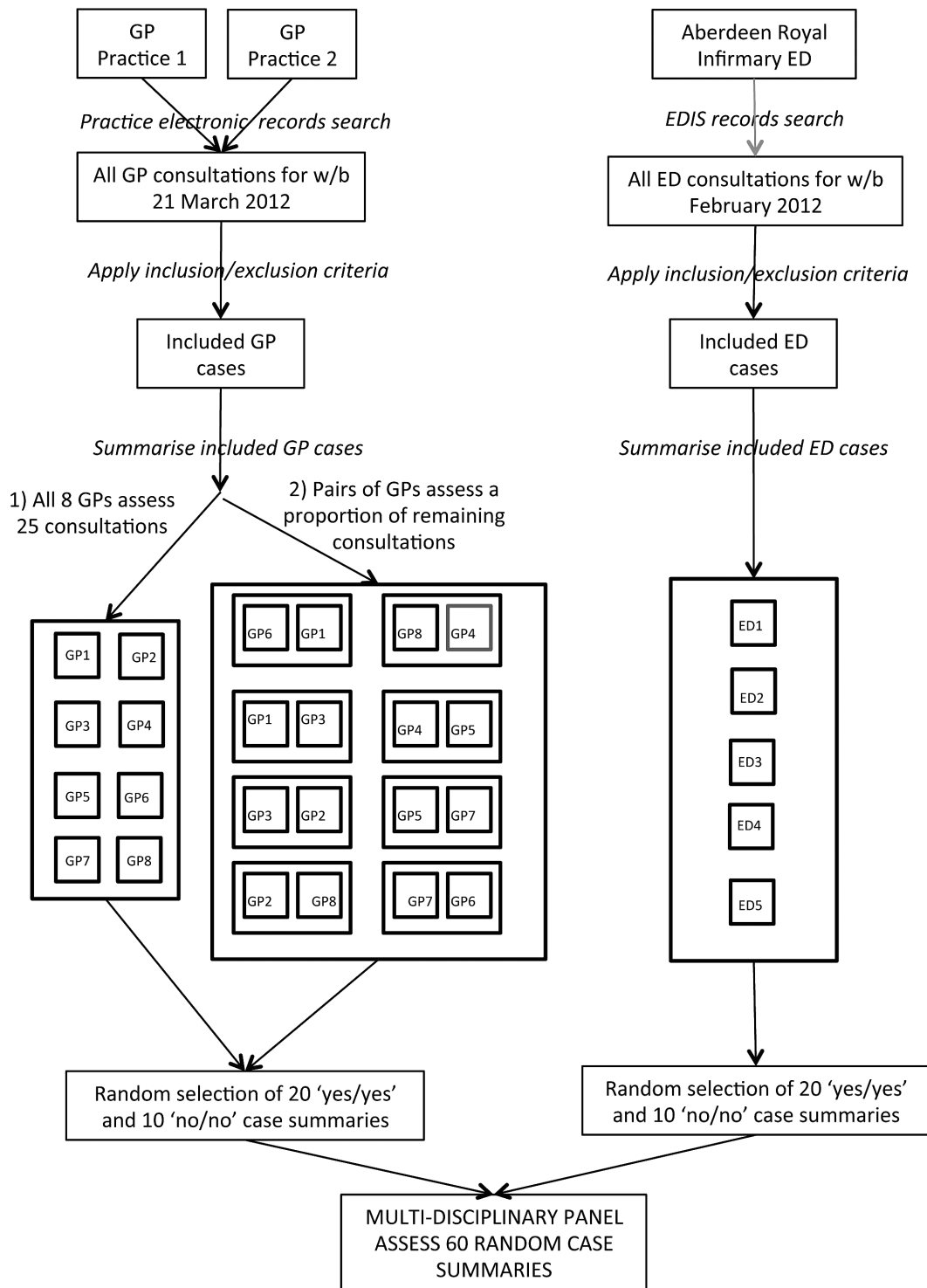


Figure 1. Flow-chart of consensus process

sample of 25 consultations assessed by the uni-disciplinary panel of GPs, consensus was achieved if five of the eight members were in agreement. Inter-rater agreement was calculated using pairwise Cohen’s kappa ( $\kappa$ ) for each panel member with each other panel member and across the whole panel using multiple kappa (19,20). For the remaining 328 consultations (assessed by GP pairs), consensus was achieved if both GPs were in agreement. Disagreements were resolved by a third GP. Consensus in the ED panel was defined

as  $\geq 60\%$  agreement (at least three of five members in agreement). This achieved a majority decision. Inter-rater agreement within pairs of ED panel members was assessed using pairwise Cohen’s kappa and across all five panel members together using multiple kappa. Consensus for the multi-disciplinary panel was defined as  $>60\%$  agreement ( $\geq 17$  members in agreement). Cohen’s kappa was used to assess agreement between the uni-disciplinary panel and multi-disciplinary panel assessments.

## Estimate of costs

Estimates were made of potential annual costs associated with the burden of minor ailments that presented in general practice or ED and were deemed manageable in a community pharmacy, had actually presented at community pharmacy. The assumptions and cost derivation are summarized in [Box 1](#).

### Box 1. Assumptions associated with the derivation of potential burden and costs

The prevalence estimates derived from the consensus exercise were assumed to represent national figures and applied to annual consultation rates. The costs per consultation were derived from the results of a recent cohort study (17) which compared the NHS and patient medication costs for an index consultation and 2-week follow-up, for patients deemed to have symptoms suggestive of minor ailments who presented in community pharmacies, EDs and general practices. The mean consultation cost was lowest for pharmacy participants and the mean incremental cost (compared with pharmacy) was estimated to be £113.62 (95% CI: £81.78–£145.47) for ED and £57.04 (95% CI: £34.95–£79.12) for general practice (17). As such, these were assumed to be the costs that would accrue if a person presented at the community pharmacy rather than general practice or ED. These costs were then applied to the annual number of cases that could be diverted from either general practice or ED to community pharmacy, giving an estimate of the potential annual costs.

## Results

### Routine data collection

Data were collected on 1175 general practice consultations (Practice 1 = 699; Practice 2 = 476) and 1014 ED consultations. Of these, 494 (42.0%) general practice and 550 (54.2%) ED consultations occurring 'in hours' were reviewed; 353 general practice (Practice 1 = 221; Practice 2 = 132) and 219 ED consultations fulfilled the inclusion criteria.

### Consensus exercise

The consensus results are presented in [Table 3](#).

#### General practice panel

With respect to Q1, 'Was this consultation for a minor ailment?', 110/353 general practice consultation summaries were considered to be minor ailments, equating to an overall prevalence of 22.3% [95% confidence interval (CI): 18.6–25.9%], i.e. 110/494 adult 'in hours'

consultations. For Q2, 'Could this consultation have been managed in a community pharmacy?', 65/110 of the minor ailment consultation summaries were considered suitable for community pharmacy management. Thus, 13.2% (65/494) of all adult 'in hours' consultations were assessed as minor ailments, manageable in a community pharmacy (95% CI: 10.2–16.1%). For the 25 consultation summaries assessed by all eight GPs, the level of agreement within GP pairs was moderate to good (in the range  $0.4 < \kappa \leq 0.8$ ) apart from one GP whose agreement with the other seven GPs was poor to fair (range  $\kappa \leq 0.4$ ). Multiple kappa for this panel was fair ( $\kappa = 0.442$ ). Agreement within GP pairs assessing the remaining 328 consultations was poor to fair (range  $\kappa \leq 0.4$ ).

#### ED panel

The ED panel categorized 33/219 ED consultation summaries as minor ailments; overall prevalence of 6.0% (95% CI: 4.0–8.0%), i.e. 33/550 adult 'in hours' consultations. Twenty-nine were considered manageable in a community pharmacy. Thus, 5.3% of all adult 'in hours' consultations were assessed as minor ailments, manageable in a community pharmacy (29/550; 95% CI: 3.4–7.1%).

Substantial variation in response to assessments occurred across ED panel members. For example, one panel member responded positively to Q1 for only 7 consultation summaries, whereas another panel member responded positively to the same question for 102 summaries. Similar variation was observed with Q2. Inter-rater agreement within pairs of ED panel members was most often fair ( $0.2 < \kappa \leq 0.4$ ) (20) and for some consultations poor ( $\kappa < 0.2$ ). Agreement across all five panel members was poor for Q1 ( $\kappa = 0.178$ ) and fair for Q2 ( $\kappa = 0.223$ ). Complete agreement among all five panel members in terms of positive responses to both Q1 and Q2 (yes/yes) was achieved in two consultations (1%), and of negative responses (no/no) was achieved in 87 consultations (40%). A sensitivity analysis was conducted to assess the third category of 'indecision', i.e. where the panel member indicated they were unsure in their response rather than saying yes or no. Recalculation of kappa values based upon this re-categorization generally improved agreement between panel members.

#### Multi-disciplinary panel

Consensus between the multi-disciplinary and uni-disciplinary panels was achieved for 28/30 ED consultations ( $\kappa = 0.857$ ; very good) and for 25/30 general practice consultations ( $\kappa = 0.651$ ; good).

#### Frequency of types of minor ailments

Pain-related conditions were most prevalent in ED, and upper respiratory tract conditions were most prevalent in general practice ([Table 4](#)).

#### Potential costs

Patients have an average of 5.64 general practice consultations annually (8). When applied to the population of England (53.9 million) (8) and Scotland (5.3 million) (21), this equates to 333 964 704

**Table 3.** Summary of consensus exercise

	ED, % (n) (6–11 February 2012)	General practice, % (n) (21–25 March 2012)
Consultations occurring 'in hours'	100 (550)	100 (494)
Consultations fulfilling inclusion criteria	39.8 (219)	71.5 (353)
Consultations achieving consensus for Q1	6.0 (33)	22.3 (110)
Consultations achieving consensus for Q2	5.3 (29)	13.2 (65)

'In hours' is during typical community pharmacy opening hours, Monday to Saturday, 9 a.m. to 6 p.m. Inclusion: face-to-face consultation involving an adult patient ( $\geq 18$  years), with a GP/practice nurse on general practice premises, or with ED staff, occurring 'in hours'. Q1: Was this consultation for a minor ailment? and Q2: Could this consultation have been managed in a community pharmacy?



**Table 4.** Types of minor ailments

Minor ailment	ED consultations	General practice consultations
	% (n)	% (n)
Upper respiratory tract condition (e.g. sore throat, cough, cold)	3.4 (1)	44.6 (29)
Musculoskeletal injury/pain	75.9 (22)	26.2 (17)
Skin problems	–	10.2 (7)
Ear problems (including wax)	–	9.2 (6)
Eye problems	10.3 (3)	–
Other (including smoking cessation, travel vaccination, dental, stomach upset)	10.3 (3)	9.2 (6)
Total	100 (29)	100 (65)

general practice consultations across both nations each year. Above we estimated that 65 minor ailments out of 1175 GP consultations (5.5%) were deemed manageable in a community pharmacy. When applied to the aforementioned annual number of consultations across England and Scotland, this equates to 18 474 643 consultations that might be diverted from general practice annually. The estimated potential annual costs would be £1 053 765 012 (95% CI: £645 780 784–£1 461 749 426).

The combined total for annual ED attendances in England and Scotland is 23 049 225 (22,23). Assuming that 2.9% (29/1014) of these were for minor ailments manageable in a community pharmacy, this equates to 659 199 attendances that could be redirected away from EDs annually, with an estimated potential annual cost of £74 900 007 (95% CI: £53 906 280–£95 893 773). For both general practice and ED, across England and Scotland, the total potential annual costs amount to ~£1.1 billion (see [Box 1](#) for assumptions).

## Discussion and conclusion

### Summary

In this exploratory study, >1 in 10 general practice and 1 in 20 ED consultations were for minor ailments. Given that out-of-hours consultations were excluded, this is likely to underestimate the total burden of these conditions on higher cost settings.

### Strengths and limitations

This study is the first to provide a gross estimate of the prevalence of minor ailments in general practice and ED since the introduction of pharmacy-based minor ailment schemes in the UK. Our novel approach combined routine data analysis with a consensus exercise involving a broad spectrum of panel members. Bias in the initial selection and screening of consultations was minimized with duplicate assessors. All data were collected in Scotland which has no prescription charges and a national pharmacy-based minor ailment scheme has been in existence since 2006. Data were derived from two general practices and one ED in a 1-week period in early 2012. As such, the number of consultations they provided as a proportion of the national total of consultations was small. These factors and the possibility of seasonal variation may limit the generalizability of the results. Both general practices were located in an urban setting which may also affect the generalizability of the findings. However, they were selected to ensure that patients consulting at these general practices had the option of seeking care from a pharmacy or ED in the same geographical area. This would not necessarily be the case in a rural setting.

The data were restricted to adult consultations on the basis they would be the primary decision maker in seeking care for their own minor ailments. As such, the true burden of minor ailment consultations in general practice and ED will be higher as this study excluded

children, who comprise a large group of ED attendees. This may explain some of the differences in prevalence figures compared with other studies where patients of any age were included. In addition, exclusion of telephone consultations may have led to a slight underestimate of the total minor ailment consultations in general practice.

Despite providing a definition of ‘minor ailment’, the ED doctors and GPs demonstrated considerable variation and, in some cases, a very conservative approach, to what constitutes a minor ailment suitable for management in a community pharmacy. This may suggest uncertainty about services and treatments available from pharmacies. Similar uncertainty is likely to be reflected in the general public and could influence their health-seeking behaviour.

Direct comparison between the current estimates and other studies is limited due to variation in methods, health systems and definitions. For example, the current study only considered consultations ‘in hours’ to reflect typical opening hours of community pharmacies. Another study included out-of-hours general practice consultations and estimated that up to 28% of these were at least partly associated with minor ailments. The current study may have underestimated the true burden of minor ailments in higher cost settings. With regard to the estimated potential costs, these should be treated with caution as they are based on a number of assumptions, e.g. the data were derived from urban areas and assumed that all diverted ED and general practice minor ailments would have actually presented at a community pharmacy.

The cost analysis used national data and results of the MINA Cohort Study (17) to derive gross estimates of the burden of these consultations in terms of number and costs. Due to the limitations of the data from both components of the MINA programme of work, these estimates should be treated with caution. The consultation costs estimates were derived from the cohort study mentioned above.

Despite these limitations, these findings demonstrate that substantial numbers of consultations for minor ailments continue to present to general practice and EDs, with associated implications for resource use.

The relatively low kappa values indicate a general lack of consensus among panel members. This may be due to: a lack of awareness among panel members, e.g. general practice and ED staff, regarding ailments that are treatable in the community pharmacy setting; insufficient data provided within the consultation summaries on which to base a decision (however, this summary was used to reflect the type of information that would be available to community pharmacy personnel when managing consultations of this type); genuine disagreements about conditions/symptoms that could be managed effectively by community pharmacy personnel. As such the panel members of both interdisciplinary panels lacked agreement regarding which consultations could indeed be treated in the community pharmacy setting. This also suggests that the true burden of minor ailments on high cost settings may have been underestimated as a result of this lack of awareness.

### Comparison with existing literature

Previous estimates of the prevalence of minor ailments in general practices have ranged from 18–28% (4, 5); the current estimate (22.3%) falls within this range. In the current study, 59% (65/110) of all general practice consultations deemed to be minor ailments were considered suitable for management in community pharmacy which is considerably higher than the 37% estimated 15 years ago (24,25). This might suggest GPs' growing awareness and acceptance of community pharmacy as a suitable source of care for patients with these conditions.

The estimated prevalence of ED consultations for minor ailments suitable for community pharmacy management (5.3%) is slightly lower than previous studies. Bednall *et al.* (1999) reported that 8% of adult ED presentations over a 2-week period would have been appropriate for community pharmacist management (26). More recently, a systematic review of 26 studies in the USA reported that 37% of ED visits were non-urgent (27) and a large US study reported that 6.3% of 34 942 ED visit records would have been suitable for management in primary care (28). Consistent with previous reports, consultations for minor ailments in general practice are most often concerned with pain, upper respiratory tract and skin conditions, while ED consultations were most frequently associated with pain (29). Globally, pain is the most common reason for presenting to an ED (30,31). Analgesics are the most commonly purchased OTC medicines in the UK and Europe (32) and the most frequently supplied medicines via pharmacy-based minor ailment schemes in the UK (33).

### Implications for research, practice and policy

A validation study of these findings in a larger sample would provide more accurate estimates of total burden and costs of minor ailment consultations in general practice and EDs that might be reduced by transferring these to community pharmacies. Decisions about where to seek care for minor conditions are multi-factorial (1,2,27,34,35). Guiding patients' decisions by raising awareness of symptoms and ailments suitable for management by community pharmacy personnel may help to change health-seeking behaviour. Effective strategies are needed to achieve behaviour change. The high proportion of minor ailments concerning pain suggests that a focus on the management of acute pain and effective analgesia from community pharmacies would make the most impact.

The low level of consensus among the uni-disciplinary panels suggests wide variation in doctors' perceptions of minor ailments suitable for pharmacy management. Health care professionals and the general public may underestimate or be unaware of the services available to manage minor conditions and/or the range of medicines available from community pharmacies. In the last 30 years, >90 medicines have been re-classified as OTC products in the UK (36), widening access to effective treatments for many minor ailments. Raising awareness, with both clinicians and the public, of community pharmacy's potential to manage minor ailments might help moderate demand for medical services.

### Declaration

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