- 10 Kjellgren K, Ahlner J, Saljo R. Taking antihypertensive medication—controlling or cooperating with patients? Int J Cardiol 1995;47:257-68.
- 11 Krall R. Interactions of compliance and patient safety. In: Patient compliance in medical practice and clinical trials. New York: Raven Press,
- 12 Sackett D, Haynes R, Gibson E, Taylor D, Roberts R, Johnson A. Patient compliance with antihypertensive regimens. Patient Couns Health Educ 1978;1:18-21.
- 13 Melnikow J, Kiefe K. Patient compliance and medical research: issues in methodology. J Gen Intern Med 1994;9:96-104.
 14 Urquhart J. Role of patient compliance in clinical pharmacokinetics. A
- review of recent research. Clin Pharmacokinet 1994;27:202-15.
- 15 Guerrero D, Rudd P, Bryant-Kosling C, Middleton B. Antihypertensive medication taking: investigation of a simple regimen. Am J Hypertens
- 16 Mallion J, Dutrey C, Vaur L, Genes N, Renault M, Elkik F, et al. Benefits of electronic pill boxes in evaluating treatment compliance of patients with mild to moderate hypertension. J Hypertens 1996;14:137-44
- 17 Mallion J, Meilhac B, Tremel F, Calvez R, Bertholom M. Use of a microprocessor-equipped tablet box in monitoring compliance with antihypertensive treatment. J Cardiovasc Pharmacol 1992;19:S41-8.
- 18 O'Brien E, Aktins N, Mee F, O'Malley L. Comparative accuracy of six ambulatory devices according to blood pressure levels. J Hypertens 1993:11:673-5.
- 19 Altman D. How large a sample? In: Gore S, Altman D, eds. Statistics in practice. London: BMA, 1982:6-8.
- 20 Eisen SA, Miller DK, Woodward RS, Spitznagel E, Przybeck TR. The effect of prescribed daily dose frequency on patient medication compliance. Arch Intern Med 1990;150:1881-4.

- 21 Andrejak M, Genes N, Vaur L, Poncelet P, Clerson P, Carre A. Electronic pill-box in the evaluation of antihypertensive treatment compliance: comparison of once daily versus twice daily regimen. Am J Hypertens 2000;13:184-90.
- 22 Waeber B, Gastone L, Kolloch R, McInnes G. Compliance with aspirin or placebo in the hypertension optimal treatment (HOT) study. J Hypertens . 1999:17:1041-5.
- Cramer J, Scheyder R, Mattson R. Compliance declines between clinical visits. Arch Intern Med 1990;150:1509-10.
- 24 Kruse W, Weber E. Dynamics of drug regimen compliance: its assessment microprocessor-based monitoring. Eur J Clin Pharmacol
- 25 Leenen F, Wilson T, Bolli P, Larouchelle P, Myers M, Handa SP, et al. Patterns of compliance with once versus twice daily antihypertensive drug therapy in primary care: a randomized clinical trial using electronic monitoring. Can'J Cardiol 1997;13:914-20.
- 26 Boissel J, Meillard O, Perrin-Fayolle E, Ducret T, Alamercery Y, Sassano P, et al. Comparison between a bid and tid regimen: improved compliance with no improved antihypertensive effect. The EOL research group. Eur J Clin Pharmacol 1996;50:63-7.
- Waeber B, Vetter W, Darioli R, Keller U, Brunner H. Improved blood pressure control by monitoring compliance of antihypertensive therapy. Int I Clin Pract 1999:53:37-8.
- 28 McKenny J, Munroe W, Wright J. Impact of an electronic medication compliance aid on long-term blood pressure control. J Clin Pharmacol 1992;32:277-83.

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Managing demand: transfer of management of self limiting conditions from general practice to community pharmacies

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The management of patients who visit general practitioners for acute, self limiting, health problems is a widespread concern for the workload of general practitioners.1 Although nurses and pharmacists receive government support for providing treatment for self limiting conditions,2 patients exempt from prescription charges are not necessarily motivated, or do not have the resources, to obtain care from other sources.3 4 This increases the workload for general practitioners in areas with high percentages of exempt patients. We examined how referring patients with self limiting conditions directly to a community pharmacist would affect general practitioners' workload.

Participants and methods

All patients seeking general practice appointments or telephone prescriptions for 12 conditions at one general medical practice were offered a consultation with a community pharmacist at one of eight community pharmacies serving that practice.5 The pharmacists prescribed treatments from a limited formulary. Patients exempt from NHS prescription charges received medicines free of charge through one pharmacy, which they chose from the eight included in the trial. Participants were patients who obtained general practice care over a four month baseline period and those who used general practice or pharmacy services during a six month intervention period.

Once we had removed the financial disincentive to use alternative sources of primary care, we were able to assess the extent to which patients would transfer from general practice care to community pharmacy management. We measured transfer rates and

reductions in general practice consultations for the 12 conditions together and individually. We also examined prescribing outcomes and reconsultation

Results

Over the six months of the trial, the overall workload of the general practitioners was unaffected, but the workload for the 12 study conditions decreased (P = 0.001, 95% confidence interval 0.397 to -0.108). Overall, 37.8% of the combined consultations for the 12 conditions were transferred, but specific conditions had higher transfer rates—head lice, indigestion, thrush, and constipation. Patients that presented with earache, cough, and sore throat (or any combination of these) were more likely to want to consult a general practitioner (table).

Most patients (88.7%) who transferred to the pharmacy were prescribed a formulary product (table). Almost half (49.0%) of the patients who consulted a general practitioner were prescribed a drug that could have been provided from the pharmacies' limited formulary, and an eighth received prescriptions for products that could be purchased over the counter. Almost a quarter (22.6%) of general practice consultations resulted in a prescription for an antibiotic, while 10.4% patients received a prescription for a condition unrelated to the reason for the consultation. Reconsultation rates did not differ significantly between patients who consulted a general practitioner and those who consulted a pharmacist. Both groups of patients were comparable with respect to age, sex, and the number of

Transfer rates for presenting conditions, and intervention outcomes, in patients who were offered management by community pharmacy. Values are numbers (percentage) unless otherwise specified

	Total number of consultations	Treatment provider		
		General practitioner or nurse practitioner*	Community pharmacist†	Transfer rate (%)
Presenting condition				
All conditions	1522	946	576	37.8
Constipation	19	9 (1.0)	10 (1.7)	52.6
Cough	268	235 (24.8)	33 (5.7)	12.3
Diarrhoea	48	33 (3.5)	15 (2.6)	31.3
Earache (plus other symptom)	118	104 (11.0)	14 (2.4)	11.9
Hay fever	4	3 (0.3)	1 (0.2)	25.0
Head lice	395	67 (7.1)	328 (56.9)	83.0
Headache	8	6 (0.6)	2 (0.3)	25.0
Indigestion	5	1 (0.1)	4 (0.7)	80.0
Nasal symptoms	15	9 (1.0)	6 (1.0)	40.0
Sore throat	120	96 (10.1)	24 (4.2)	20.0
Temperature	20	12 (1.3)	8 (1.4)	40.0
Thrush	66	16 (1.7)	50 (8.7)	75.8
Upper respiratory tract infection symptoms (plus other symptom)	419	342 (36.2)	77 (13.4)	18.4
Other symptom combinations	17	13 (1.4)	4 (0.7)	23.5
Intervention outcomes				
Received formulary product for study condition‡		464 (49.0)	511 (88.7)	
Received (non-formulary) antibiotic		214 (22.6)	NA	_
Received other non-formulary prescription only medicine		56 (5.9)	NA	
Received other non-formulary over the counter medicine		115 (12.2)	NA	
Bought over the counter medicine (non-exempt patients)		NA	8 (1.4)	_
Received pharmacy advice only		NA	9 (1.6)	
Received treatment for non-study condition		98 (10.4)	NA	
Failed to show following referral to trial		NA	27 (4.7)	_
Referred back to general practitioner		NA	21 (3.6)	
Reconsultation with general practitioner or pharmacist (within 14 days) for same condition		38 (4.0)	33 (5.7)	

NA=not applicable. *Median age of patients 21.8 years, 382 (40.4%) male patients. †Median age of patients 17.8 years, 153 (26.6%) male patients. ‡Formulary was limited to over the counter drugs prescribable by general practitioners.

consultations with a general practitioner in the previous six months.

Comment

Management of some self limiting conditions by community pharmacists is feasible, satisfactory, and acceptable to patients. For the 12 self limiting conditions studied, the trial resulted in the transfer of 37.8% of the general practice workload to the community pharmacy. However, the total workload of the general practitioners did not fall, since the number of appointments during the trial was similar to that at baseline and during the same period in the previous year. Further work is required to fully understand the different levels of transfer achieved with different conditions.

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Contributors: KH designed the study, wrote the proposal, made the funding bid, was overall coordinator, and participated in writing the paper. ZW coordinated and conducted the fieldwork, analysed the data, and contributed to writing the paper. PN and JC helped formulate the study, provided pharmaceutical expertise, and contributed to writing the paper. PN was involved in the funding bid. FB helped design the pharmacy formulary and facilitated access to the general practitioners and pharmacists. AR provided input into the formulation of the study. Chris Boyke and Hugh Gravelle of National Primary Care Research and Development Centre and Centre for Health Economics at York University provided statistical advice. Liz Seston, research associate at School of Pharmacy, helped with data collection. KH is guarantor for the paper.

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- Over the counter drugs [editorial]. Lancet 1994;343:1374-5. Department of Health. The NHS plan: a plan for investment, a plan for reform. London: HMSO, 2000.
- Thomas DHV, Noyce PR. The interface between self medication and the NHS. BMJ 1996;312:688-91.
- Hassell K, Rogers A, Noyce PR. Community pharmacy as a primary health care resource: a framework for understanding pharmacy utilisation. *Health Soc Care Community* 2000;8:40-9.
 Whittington Z, Cantrill J, Hassell K, Bates F, Noyce P. Community
- pharmacy management of minor conditions-the "care at the chemist" scheme. *Pharm J* 2001;266:425-8.

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Endpiece

Beginning of the end

Senescence begins And middle age ends, The day your descendants Outnumber your friends.

> Ogden Nash (1902-71), American writer of light verse. Much of his writing has appeared in the New Yorker.

Submitted by Fred Charatan, retired geriatric physician, Florida