

Adherence to pharmacotherapeutic advice in the guidelines of the Dutch College of General Practitioners

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What is this chapter about?

The guidelines of the Dutch College of General Practitioners were used to assess the adherence to pharmacotherapeutic advice for three diagnoses with a high prevalence: hypertension, depression and cystitis. Medication prescribed in 2001 was analysed for adherence to these guidelines. Adherence varies according to guideline across the diagnoses. General practitioners (GPs) adhered best to the cystitis guideline (70.4%), followed by the hypertension guideline (55.6%), the 2003 depression guideline (50.2%) and worst to the 1994 depression guideline (11.1%). One should be careful in interpreting these results in terms of rationality or quality. There are many reasons why GPs would consciously deviate from the guidelines.

Introduction

The goals of good prescribing, or rational pharmacotherapy, are to maximise effectiveness, minimise risks and costs, and to respect patient preferences.¹ At the 1987 World Health Organization (WHO) conference in Nairobi, the following statement was agreed upon: 'rational use of drugs requires that patients receive medication appropriate to their clinical needs, in doses that meet their own individual requirements, for an adequate period of time and at the lowest costs to the community'.² Guidelines facilitate effective, efficient, and cost-aware prescribing. Since 1989, the Dutch College of General Practitioners (Nederlands Huisartsen Genootschap, NHG) has published about 80 guidelines, approximately 50 of which contain pharmacotherapeutic advice. These guidelines are developed in a transparent way and are evidence based as much as possible. They are revised on a regular basis. Monitoring adherence to such guidelines is a logical way to assess prescribing behaviour and, based on this, improve prescribing quality in general practice.³ Braspenning *et al.* show in Chapter 22 of this book that Dutch GPs follow these guidelines to a large extent. They have developed 139 indicators based upon the NHG guidelines, including diagnostic, prescription and referral indicators. Adherence was 74% on average, but it was lower for the indicators related to prescribing: 62%. There was a large

variation in the degree of adherence between the different guidelines and between different advice in guidelines. For example, when it comes to the prescription of antibiotics, GPs adhere better to advice not to prescribe antibiotics for certain diagnoses than to advice on the choice of a certain antibiotic.

The present study compares GPs' adherence to pharmacotherapeutic advice given in three guidelines of the Dutch College of General Practitioners: hypertension (1999), depression (1994/2003) and cystitis (1999). These three guidelines cover diagnoses that are frequently presented in Dutch general practice. The second Dutch National Survey of General Practice (DNSGP-2) prevalence rate of hypertension was 57.1 per 1000 patients in 2001, for depression 21.2 per 1000 patients and for cystitis 38.5 per 1000 patients.

How was it done?

For a description of the methods of the first and second Dutch National Surveys of General Practice, i.e. DNSGP-1 (1987) and DNSGP-2 (2001), see Chapter 2. The following is specific for the study described in this chapter.

Selection of general practitioners

Of the DNSGP-2 participants 102 GPs working in 67 practices provided data of sufficient quality. For different reasons a number of GPs were not included in the analyses: the registration period was too short (4 practices), prescriptions could not be linked to individual GPs (20 practices) or less than 40% of the prescriptions were provided with a diagnosis (13 practices). GPs included in these analyses did not differ significantly from the other GPs who participated in the DNSGP-2 (see Table 25.1). Only the number of single-handed practices was relatively over-represented in our selection.

Table 25.1 Features of GPs included and not included in this study

	Included (<i>n</i> = 102)	Not included (<i>n</i> = 93)
GPs in single-handed practice (%)	42	20 ^a
GPs in dispensing practice (%)	7	13
Urbanisation level (%)		
non- and small urban	40	44
moderate urban	17	20
(highly) urban	43	37
Female GPs (%)	22	32
Age (mean years)	48	46
Number of peer review group meetings visited	8	7
Use of guidelines, precepts or formularies (mean; 1 = never, 5 = often)	4	4
Use of other information of pharmaceutical industries (1 = never, 5 = often)	1	1
Number of representatives from pharmaceutical companies in the last 4 weeks	2	2
Number of hours of education a year	50	50

^a*P* < 0.01 (*t*-test).

Adherence to guidelines of the Dutch College of General Practitioners

Prescriptions for three diagnoses with a high prevalence were selected on the basis of the diagnostic code registered with the prescription: hypertension (International Classification of Primary Care (ICPC): K86), depression (ICPC: P76) and cystitis (ICPC: U71). If the prescribed drug matched the advice given in the most recent guideline for that indication, irrespective of restrictions mentioned in the guideline (e.g. comorbidity), we considered the prescription as 'adherent'. For hypertension and cystitis, the guidelines of 1999 were used, for depression the 1994 guideline was used. The depression guideline was revised in 2003. Because of a possible effect of GPs anticipating to this revision, the prescriptions for depression were also checked with the 2003 guideline.

The GPs included in these analyses recorded a total of 1 138 889 prescriptions. Of these prescriptions, 6.3% involved hypertension, 2.0% depression and 1.5% cystitis.

What was found?

Table 25.2 summarises the degree of adherence per guideline. GPs adhered best to the cystitis guideline (70.4%), followed by the hypertension guideline (55.6%) and the 2003 depression guideline (50.2%) and worst to the 1994 depression guideline (11.1%).

Hypertension

The pharmacotherapeutic advice in the hypertension guideline differs for various groups of patients. For all patients the guideline offers first, second and third preferences. For patients without relevant comorbidity, as well as for patients with diabetes mellitus, diuretics are the most preferred choice, followed by beta-blockers and angiotensin-converting enzyme (ACE) inhibitors. Depending on the type of comorbidity other preferences are given. For example, GPs are advised to prescribe beta-blockers when a patient has coronary heart disease; diuretics are second choice for these patients; ACE inhibitors third choice. Beta-blockers are contra-indicated for asthma/chronic obstructive pulmonary disease (COPD), which is why they do not show up in the list of preferred antihypertensives for these patients. While for the largest groups of patients the guideline prefers diuretics, GPs slightly preferred to prescribe beta-

Table 25.2 Percentage of adherence to pharmacotherapeutic advice in the guidelines for hypertension, depression and cystitis

Disease	Publication year	Prescriptions (<i>n</i>)	Adherence DNSGP-2 (%)
Hypertension (K86)	1999	71 295	55.6
Depression (P76)	1994	23 281	11.1
	2003	23 281	50.2
Cystitis (U71)	1999	16 850	70.4

blockers (*see* Table 25.3). Atenolol was the most frequently prescribed beta-blocker (11.7% of all prescriptions for antihypertensives), followed by metoprolol (8.5%). Hydrochlorothiazide was the diuretic most frequently

Table 25.3 Medication considered as adherent according to the guidelines of the NHG and percentage of the prescriptions for the specific indications^a

Disease	NHG-guideline	ATC code	Medication	Prescriptions (%)	
Hypertension (K86)	1999	C07AB03	Atenolol (2)	11.7	
		C03AA03	Hydrochlorothiazide (1)	10.8	
		C07AB02	Metoprolol (2)	8.5	
		C09AA02	Enalapril (3)	8.0	
		C08CA01	Amlodipine	4.3	
		C08CA05	Nifedipine (3)	3.8	
		C03BA04	Chlorothalidone (1)	3.5	
		C03EA01	Hydrochlorothiazide with potassium-saving diuretics (1)	3.4	
		C09AA01	Captopril (3)	2.2	
		C09CA01	Losartan	2.2	
		C09AA03	Lisinopril	2.0	
		C07CB03	Atenolol with other diuretics (2)	1.7	
		C07AB07	Bisoprolol	1.5	
		C09BA02	Enalapril with diuretics (3)	1.1	
		C09BA01	Captopril with diuretics (3)	0.7	
		C07BB02	Metoprolol with thiazide (2)	0.2	
		C07FB03	Atenolol with other anti-hypertension medication (2)	0.0	
		Depression (P76)			1994 guideline
N06AB05	Paroxetine			Paroxetine	32.8
N06AB03	Fluoxetine			Fluoxetine	6.5
N06AA09	Amitriptyline			Amitriptyline	6.2
N06AX16	Venlafaxine			Venlafaxine	5.1
N05BA04	Oxazepam			Oxazepam	4.8
N06AB08	Fluvoxamine			Fluvoxamine	4.6
N06AX11	Mirtazapine			Mirtazapine	4.5
N06AB04	Citalopram			Citalopram	4.0
N06AA04	Clomipramine			Clomipramine	2.7
N05CD07	Temazepam			Temazepam	2.4
N06AB06	Sertraline			Sertraline	2.4
N06AA10	Nortriptyline			Nortriptyline	1.2
N06AA02	Imipramine			Imipramine	0.4
Cystitis (U71)	1999	J01EA01	Trimethoprim	31.1	
		J01XE01	Nitrofurantoin	26.1	
		J01MA06	Norfloxacin	6.0	
		J01EE01	Co-trimoxazole	5.0	
		J01CR02	Amoxicillin/ clavulanate	4.3	
		J01CA04	Amoxicillin	4.0	
		J01MA02	Ciprofloxacin	3.1	
		G04AC01	Furadantin	3.0	

^aThe items in bold indicate that the medication matches the advice in the guidelines.

The figures between brackets indicate whether the medication is a first, second or third preference according to the guidelines for patients without comorbidity.

ATC: Anatomical Therapeutic Chemical classification.

prescribed (10.8%), followed by chlorothalidon (3.5%); for ACE inhibitors, GPs' first choice was enalapril (8.0%). These antihypertensives are all mentioned in the guidelines and the prescription is considered as adherent. The most prescribed non-matching antihypertensive drug was amlodipine, a calcium channel blocker. More than 5% of all prescriptions for hypertension consisted of the relatively new angiotensin II receptor blockers like losartan, candesartan and valsartan. These prescriptions do not match the advice in the guidelines.

Depression

A lack of adherence was found for the 1994 depression guideline (*see* Table 25.3). Only 11.1% of all prescriptions matched the advice in this guideline. In 2003 the guideline was revised. The adherence to this new guideline was much higher than to the 1994 one, although public action took place two years after the data collection. The main difference between the 1994 and 2003 guideline is that tricyclic antidepressants (TCAs) and selective serotonin reuptake inhibitors (SSRIs) were both first-choice products in 2003, while in 1994 TCAs were preferred. Within both groups of medication the 2003 guideline prefers certain specific drugs. For SSRIs these are paroxetine, fluvoxamine and sertraline. The difference in adherence between the 1994 and 2003 guideline is mainly due to the prescription of paroxetine. It was by far the most frequently prescribed drug for depression and accounted for 32.8% of all prescriptions for depression in 2001. Within the group of TCAs, amitriptyline (6.2%) and clomipramine (2.7%) were most frequently prescribed; both TCAs match the advice in the 2003 guideline. The most frequently prescribed non-adherent drugs were fluoxetine and venlafaxine, both responsible for more than 5% of all prescriptions for depression. Also a number of benzodiazepines, like oxazepam, temazepam and diazepam, were prescribed in considerable amounts, respectively 4.8%, 2.4% and 1.4%.

Cystitis

For cystitis the NHG guideline provides different advice for uncomplicated and complicated cystitis. Both trimethoprim and nitrofurantoin are first-choice medication for uncomplicated cystitis. In 2001, trimethoprim accounted for 31.5% of all prescriptions for cystitis; nitrofurantoin for 26.1% (*see* Table 25.3). For complicated cystitis as well as for cystitis in children under the age of 12 years, the guideline advises amoxicillin (combined with clavulanate), or, in cases of hypersensitivity, co-trimoxazole. Together these drugs accounted for 13.3% of all prescriptions for cystitis in 2001. The most frequently prescribed medication which was considered as non-adherent is norfloxacin (6.0%).

What to think about it

In this study, we examined the adherence to three guidelines. More than half of the prescriptions for hypertension were as suggested in the guidelines. Our study, however, does not provide insight into the 'stepwise following' of the

guideline. Moreover, it does not distinguish between choices made for patients with and without comorbidity. GPs make different choices, taking the situation of the individual patient into account. A study carried out by van Dijk *et al.* (2004) among 180 Dutch GPs showed that GPs claim to prescribe according to the guidelines for asthma/COPD, coronary heart disease (CHD) and heart failure.⁴ However, for diabetes mellitus, most of the GPs stated they were non-adherent to the guideline. While the first-choice antihypertensive for patients with diabetes mellitus is a diuretic, only 11% of the GPs claim diuretics to be their first choice. Three-quarters (74%) prefer ACE inhibitors, while another 8% have angiotensin II receptor blockers as their first-choice antihypertensive for diabetics. These GPs substantiated their choice by stating that ACE inhibitors and angiotensin II receptor blockers better protect the patient's kidneys. The substantial contribution of relatively new classes of drugs, like the not recommended angiotensin II receptor blockers prescribed for hypertension, is also found in the literature. They are prescribed despite the still limited evidence on outcomes.⁵

For depression, little more than 10% of the prescriptions were suggested in the guidelines. A reason for this is that the first depression guideline, published in 1994, was conservative in its pharmacotherapeutic advice and did not include SSRIs that had already been available in 2001 for several years. Considering the 2003 guideline, half of the prescriptions were adherent.

GPs adhere to the depression guidelines for about 10% of the prescriptions.

The reason to look further into the adherence to the depression guideline of 2003 was to discover if the prescription behaviour of the GPs was ahead of the new guideline. This was based on the assumption that the GPs considered the guideline of 1994 as obsolete and therefore changed their prescribing behaviour based on recent literature about new medication. This assumption was confirmed in a study by Volkers *et al.* (2005).⁶ From that study it also became clear that GPs prefer SSRIs because they assume these to be more effective or to have fewer adverse effects compared to TCAs. Despite the fact that SSRIs are now also first-choice antidepressants, adherence to the guideline of 2003 is not as high as might have been expected. Two types of frequently prescribed drugs (fluoxetine and venlafaxine), both responsible for more than 5% of all prescriptions for depression, are not recommended in the 2003 guideline. Also the prescription of benzodiazepines, considered as non-adherent, was responsible for at least 10% of all prescriptions for depression.

For cystitis we found the highest degree of adherence: 70%. No distinction was made between uncomplicated and complicated cystitis. Van Dijk *et al.* (2004) found that at practice level, trimethoprim and nitrofurantoin accounted on average for 42.3% of the prescriptions in *first episodes* of cystitis.⁷ We found that GPs chose these two drugs in 57.2% of *all prescriptions*. The difference between these two figures can probably be explained by the fact that a patient can have more than one episode of uncomplicated cystitis during a one-year course.

One should be careful to interpret these results in terms of rationality or quality. There are many reasons why GPs would consciously deviate from the guidelines. Recently, for instance, a new approach, called concordance towards

suboptimal use of medication has been proposed.⁸ Herein, prescribing is seen as a process of shared decision making between the patient and the prescribing doctor. In this interaction process both the patients' and professionals' view and the perception about medication, and the associated harms and benefits are shared and negotiated with the intention of making the patient more compliant. Although concordance might be a satisfying target in the communication between doctor and patient, this new approach might conflict with the adherence to guidelines.

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