

REVIEW

# Overcoming barriers to effective blood pressure control in patients with hypertension

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*Key words:* Antihypertensive therapy – Blood pressure control – Cardiovascular complications – Combination therapy – Drug selection – Hypertension – Medication compliance

## ABSTRACT

*Background:* Patients with hypertension remain at increased risk of micro- and macrovascular complications unless their elevated blood pressure (BP) can be adequately controlled. However, helping patients with hypertension to get to, and stay at, target BP goals can be difficult in everyday clinical practice.

*Scope:* The present study describes the magnitude of this problem in various regions and attempts to analyse possible underlying reasons. For this purpose, a non-systematic literature review using Medline database was performed.

*Findings:* Reasons for suboptimal blood pressure control include factors under the control of the physician, such as insufficient education and motivation of the patient, reluctance to initiate lifestyle changes or drug treatment; overlooking the importance of controlling systolic BP (especially in the elderly) and failure to modify and expand therapy when it is indicated (e.g. use of combination therapy if monotherapy is proving inadequate for BP lowering). Patient-related

factors that may give rise to inadequate BP control include a lack of awareness of the relevance of hypertension, failure to comply with recommended lifestyle modifications and poor medication compliance (e.g. because of forgetfulness, tolerability problems, or incomplete understanding of the long-term nature of therapy).

*Conclusions:* These issues can be addressed by ensuring that doctors adhere more closely to national or international guidelines and that patients are well-informed about the need for long-term therapy. Further approaches include simplifying the treatment regimen (e.g. use of well-tolerated, fixed-dose combinations) and using various measures to reduce forgetfulness. With properly directed therapy and consideration of potential physician- and patient-related barriers to poor BP control, more hypertensive patients in everyday clinical practice can achieve target BP goals and thereby realise the proven benefits of antihypertensive therapy for decreasing their cardiovascular risk.

## Introduction

Despite significant advances in our ability to treat elevated blood pressure (BP) over the last decades, hypertension (defined as BP  $\geq$  140/90 mmHg) continues to be a major public health problem. Data from population surveys conducted in Europe and North America in the 1990s have indicated a prevalence ranging from around 28% of adults in Canada and the

United States to 55% of adults in Germany<sup>1</sup>. In the United States, the most recent (2001–2002) National Health and Nutrition Examination Survey (NHANES) estimated that 29.9% of the adult population had hypertension and in those aged  $\geq$  60 years the prevalence was as high as 66%<sup>2,3</sup>. If left untreated, such patients remain at increased risk for cardiovascular disease<sup>4</sup>. Indeed, mortality from both stroke and ischaemic heart disease doubles for every 20 mmHg increase in systolic

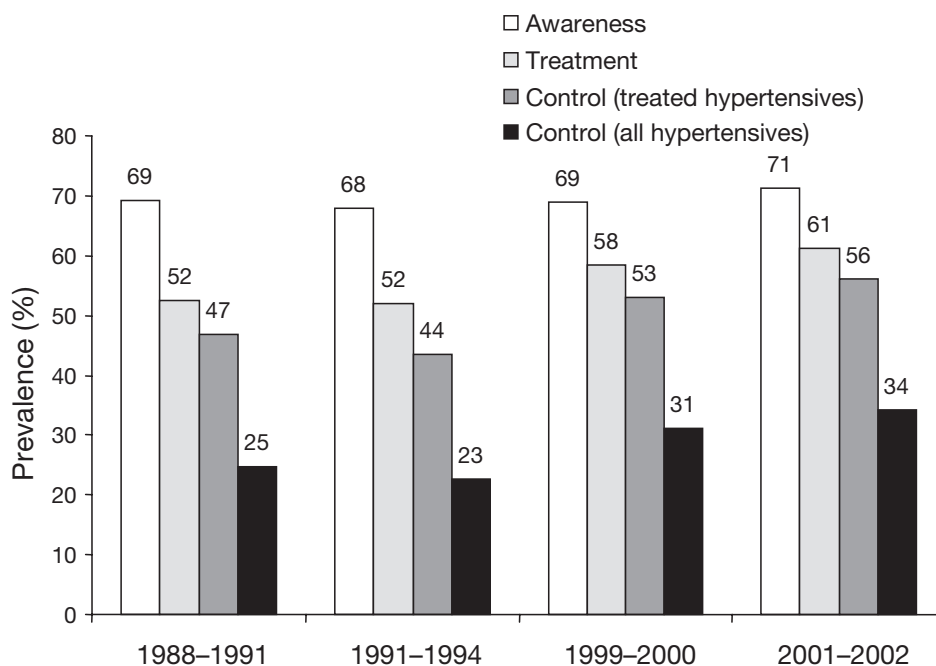
BP and 10mmHg increase in diastolic BP<sup>5</sup>, with the former representing the more potent cardiovascular risk factor in the growing population of those aged  $\geq 50$  years<sup>6,7</sup>. The excess risk of cardiovascular disease imposed by raised BP is further increased in the presence of other risk factors such as obesity, diabetes, hyperlipidaemia and cigarette smoking<sup>4,8,9</sup>.

Controlled clinical trials involving over 50 000 patients have clearly demonstrated that drug treatment of patients with hypertension reduces their risk of cardiovascular disease compared with placebo or no treatment<sup>10-13</sup>. However, despite this clear evidence, 'control' of elevated blood pressure (i.e. lowering of both systolic and diastolic blood pressure to normal) is only achieved in a small minority of patients. Several different aspects of this failure to achieve blood pressure control in a majority of patients can be identified. Firstly, many patients with hypertension remain unaware of this risk factor. Secondly, despite being diagnosed as hypertensive and becoming aware of their condition, many patients are not treated and thirdly, despite being treated for hypertension, many patients do not reach recommended target blood pressures. Thus, awareness, treatment and control represent three interrelated aspects of inadequate blood pressure control in hypertensive patients<sup>14</sup>. In the USA, approximately 30% of adults remain unaware of their hypertension, more than 40% of patients with hypertension are not treated and two-thirds of hypertensive patients are not being controlled to blood pressures of less than 140/90 mmHg (Figure 1)<sup>2,3</sup>.

From the NHANES data covering 1976–2002 it is obvious that while awareness, treatment and control of hypertension improved markedly in the USA between 1976 and 1991, subsequent improvements have been modest<sup>2,15</sup>. Low BP control rates have also been reported in population surveys undertaken in other countries (Table 1). It is, therefore, legitimate to conclude that low levels of awareness, treatment and control of hypertension represent a global challenge.

It is clear that these population-based figures differ markedly from those observed in recent clinical trials such as the Antihypertensive and Lipid-Lowering Treatment to Prevent Heart Attack Trial (ALLHAT)<sup>27</sup>, Losartan Intervention For Endpoint reduction in hypertension (LIFE) study<sup>28</sup>, Anglo-Scandinavian Cardiac Outcomes Trial Blood Pressure Lowering Arm (ASCOT-BPLA)<sup>29</sup>. In these 5–6 year studies, control of blood pressure ( $< 140/90$  mmHg) was achieved in 66% of patients in ALLHAT<sup>27</sup>, 45–48% of patients in LIFE<sup>28</sup> and 53% of patients in ASCOT-BPLA<sup>29</sup>. These rates of control are higher than values typically reported in population-based surveys and probably reflect the higher motivation, closer monitoring and more frequent follow-up of patients enrolled in clinical trials. Nevertheless, these trials demonstrate that it is possible to improve blood pressure control compared with the rates seen in population-based surveys.

Thus, despite the availability of a plethora of effective antihypertensive drugs and numerous practice guidelines, including the JNC-7 guidelines in the United States<sup>14</sup> and the ESH/ESC guidelines in Europe<sup>30</sup>, the efficiency with which the disease is managed at



**Figure 1.** Rates of blood pressure control in the National Health and Nutrition Examination Survey (NHANES) survey in the USA during 1988 to 2002<sup>2</sup>

**Table 1.** Awareness, treatment and control of blood pressure in recently published surveys (2005–2006) and the World Health Organization MONICA project

Population	Awareness (%)	Treatment (%)	Control (%)	Comment
General population in San Marino <sup>16</sup>	62.3	58.6	21.7	78% uncontrolled even in an affluent Mediterranean country with high standards of healthcare provision
General population in Greece <sup>17</sup>	60.2	51.2	32.8*	Only one third of hypertensive patients achieved blood pressure control. Two thirds of hypertensives were treated but not controlled
Age ≥ 65 years in France <sup>18</sup>	Over two thirds	81	31*	Management and control of hypertension is suboptimal in an elderly population
US adults <sup>19</sup>	–	53	–	Medication usage was lower among Hispanic (45%) than Black (54%) or White (54%) groups
General population and type 1 diabetics in USA <sup>20</sup>	Non-diabetic 45, diabetic, 53	47, 87	32, 55	Diabetics were more likely to be aware of hypertension, receive treatment and achieve BP control (< 130/85 mmHg) than non-diabetics
Age ≥ 50 years in Australia <sup>21</sup>	73.0	67.3	46.5	These values from 1997–2000 show decrease in rates of awareness, treatment and control versus 1992–1994 (79.8, 71.1 and 56.3%, respectively)
General population in Germany <sup>22</sup>	–	63.0	41.3*	These values from 1998 show improvement in treatment and control versus 1984 (45.4 and 51.7, respectively)
Portuguese adults <sup>23</sup>	46.1	39.0	11.2	Awareness, treatment and control were low in this study, compared with other European countries
General population in Ghana <sup>24</sup>	34	28	6.2	Very low levels of awareness, treatment and control may reflect the high cost of treatment and lack of healthcare resources in sub-Saharan Africa
General population in Turkey <sup>25</sup>	40.7	31.1	8.1	Very low levels of control compared with Europe and US
World Health Organization Monica Project <sup>26</sup>				
Spain	Men 62, women 83	31, 49	67*, 48*	Blood pressure control (< 140/90 mmHg) is suboptimal in between half and two thirds of hypertensive patients in the majority of countries surveyed
USA	Men 56, women 61	17, 34	44*, 52*	
Australia	Men 51, women 66	33, 41	47*, 47*	
Belgium	Men 44, women 78	24, 54	49*, 63*	
Canada	Men 57, women 69	34, 34	33*, 40*	
China	Men 49, women 63	19, 31	14*, 21*	
Denmark	Men 33, women 55	19, 26	13*, 39*	
Finland	Men 43–58, women 51–65	15–26, 21–26	20–32*, 25–31*	
Germany	Men 43–52, women 54–62	18–28, 27–48	12–20*, 32–43*	
Italy	Men 38–45, women 43–48	13–24, 25–31	13–45*, 14–31*	
New Zealand	Men 62, women 73	29, 32	53*, 57*	
Poland	Men 51, women 64	20, 40	29*, 24*	
Russia	Men 42–55, women 65–81	20–38, 41–52	21–37*, 32–52*	
Sweden	Men 33–38, women 38–56	18–19, 25	18–28*, 12–30*	
Switzerland	Men 53, women 68	22, 37	27*, 60*	
UK	Men 30–34, women 36–51	13–20, 17–28	31–40*, 39–42*	

\*As a percentage of treated patients

a community level is clearly less than optimal. This review discusses the reasons for inadequate BP lowering as well as measures that can be taken to improve the efficiency of drug therapy.

A non-systematic literature review using the Medline database was performed to support, validate and strengthen the clinically derived observations and experience presented here. This review included evaluation of epidemiological studies, clinical trials, outcomes studies, surveys reporting patient and physician attitudes towards hypertension treatment and compliance/adherence studies. All recommendations presented here are supported by clinical evidence in the literature.

## **What are the origins of inadequate BP lowering and how can they be addressed?**

Numerous factors appear to be predictive of inadequate BP control, including age, ethnic background, gender, prior antihypertensive therapy, and the presence of diabetes, obesity or left ventricular hypertrophy<sup>27</sup>. Large gender differences in rates of blood pressure control have been noted in several epidemiologic studies, such as the World Health Organization MONICA project<sup>26</sup>. Rates of blood pressure control were found to be lower in men than in women in several countries, including the USA (44% vs. 52%, respectively), Canada (33% vs. 40%) and Germany (12–20% vs. 32–43%) (Table 1)<sup>26</sup>. However, in several other countries the percentages of women with controlled blood pressure were similar to or lower than those in men. The percentages of patients achieving blood pressure control have also been shown to vary between different ethnic groups. For example, in a study conducted in the Netherlands, black patients were found to be less likely to achieve control of blood pressure than white patients, despite having similar levels of awareness and treatment<sup>31</sup>. In contrast, data from NHANES in the USA showed that awareness of hypertension was higher among black (77.7%) than white individuals (70.4%), with a similar difference for treatment rates (68.2% vs. 60.4%, respectively)<sup>32</sup>. However, treated black individuals were less likely to achieve BP goals (48.9%) than white individuals (59.7%). The relationship between blood pressure control and demographic factors such as ethnicity or gender is unclear and is complicated by the large number of confounding variables (such as dietary habits, level of physical activity, education and access to healthcare) that could also affect the likelihood of successful treatment.

Although some of the factors that affect BP control are not modifiable (e.g. age, ethnicity and gender),

others are potentially modifiable and can be considered as either physician- or patient-related. It should be noted, however, that these two categories are highly interactive and that patient behaviour will, to a large extent, depend on the attitudes and decisions of physicians. The following sections focus on the principal modifiable factors in each category and outline measures to address them and thus improve the efficacy of antihypertensive treatment for achieving target BP goals.

### **Physician-related factors**

Modifiable factors under the control of the physician include: (1) insufficient identification of hypertensive patients (e.g. by not strictly applying 140/90 mmHg as the age-independent cut-off blood pressure between normotension and hypertension); (2) failure to select the therapeutic options most appropriate for each patient; (3) uncertainty regarding when and how to implement lifestyle changes and when to initiate drug treatment; (4) providing insufficient information and failing to motivate patients to accept the need for lifestyle changes or drug treatment; (5) insufficient emphasis on the importance of lowering systolic BP levels to < 140 mmHg; (6) reluctance to modify therapy appropriately when BP goals are not achieved and (7) failure to follow up patients regularly with sufficient rigour to ensure that they are adhering to lifestyle advice (e.g. in achieving body weight control and reducing excessive alcohol or NaCl intake) and to the prescribed drug regimen.

A thorough initial assessment of the patient is necessary to assess lifestyle and identify concomitant cardiovascular risk factors, target organ damage and co-morbid conditions<sup>14,30</sup>. Additional diagnostic procedures may be indicated to identify secondary forms of hypertension, particularly in patients whose (1) age, history, physical examination, severity of hypertension, or initial laboratory findings suggest such causes; (2) BP responds poorly to drug therapy; (3) BP begins to increase for uncertain reason after being well controlled and (4) onset of hypertension is sudden<sup>14</sup>. This assessment has implications for the selection of antihypertensive drugs, the intensity of treatment required to achieve the relevant BP target, the need for concomitant therapy to modify other aspects of the risk and the frequency and thoroughness of patient follow-up. However, studies show that patients are not being investigated as thoroughly as they should be<sup>33</sup>, which may affect patient management and the achievement of BP goals. In a survey of Italian primary care physicians, a complete clinical and laboratory evaluation as recommended in the guidelines was performed in only 10% of patients<sup>34</sup>. A survey conducted in five European

countries found that 38% of physicians cited lack of time as the most important barrier to implementation of guidelines for coronary heart disease prevention<sup>35</sup>. Lack of time was cited even more frequently in Italy (42%), the UK (57%) and Sweden (65%) and is likely to compromise the ability of physicians to carry out a thorough evaluation.

As far as the initial choice of drug therapy is concerned, it is of great importance to note that numerous drug intervention trials in patients with essential hypertension have indicated that the benefits of treatment are probably attributable more to BP reduction per se than to the medication used to achieve it. However, there are also data demonstrating specific benefits and shortcomings with some antihypertensive medications<sup>36,37</sup>. For example, a recent meta-analysis suggested that  $\beta$ -blockers as a class do not provide the same protection from outcomes such as stroke as other antihypertensive drug treatment strategies<sup>38</sup>. Another meta-analysis showed that while blood pressure reduction explained most of the benefits of drug therapy, calcium channel blockers (CCBs) had some additional benefits for prevention of stroke while agents that target the renin-angiotensin-aldosterone system (ACE inhibitors and angiotensin receptor blockers [ARBs]) were beneficial for prevention of heart failure<sup>39</sup>. In contrast, a meta-analysis by Psaty *et al.* found that low-dose diuretics were at least as effective as ACE inhibitors, CCBs, alpha-blockers and ARBs in terms of reductions in the risk of cardiovascular disease events<sup>11</sup>. These differing conclusions most likely reflect variation in the trials included in each of the meta-analyses. In addition, several important clinical trials were not available at the time of the analysis by Psaty *et al.*, including the VALUE and ASCOT trials, the Study on Cognition and Prognosis in the Elderly (SCOPE), and the Morbidity and Mortality After Stroke, Eprosartan Compared With Nitrendipine for Secondary Prevention (MOSES) study. These and other studies suggest that CCBs and ARBs may be preferable for primary prevention of stroke<sup>28,40</sup>, while ARBs may have advantages in secondary prevention of stroke<sup>41</sup>. More modern antihypertensives (ACE inhibitors, CCBs and ARBs) have also been shown to be less likely to induce new-onset diabetes than diuretics and  $\beta$ -blockers<sup>42,43</sup>. Data from the ALLHAT and VALUE trials suggest that ACE inhibitors and ARBs may even be superior to CCBs in reducing the risk of new onset diabetes<sup>44</sup>.

In terms of how far BP should be lowered and the relative importance of lowering systolic versus diastolic BP, it is important to emphasise that the targets vary depending on the patient's characteristics. The JNC-7 guidelines specify a blood pressure target of < 140/90 mmHg for patients with hypertension and no other risk factors (such as end-organ damage, diabetes or renal disease) and < 130/80 mmHg for patients with

diabetes or chronic kidney disease<sup>14</sup>. For older patients, attaining systolic BP targets is a management priority<sup>14</sup>. Systolic hypertension increases with age and is the most frequent form of hypertension in older people. Moreover, it is increasingly recognized that systolic BP is a more important predictor of cardiovascular risk in patients aged 50–60 years and older (possibly as a consequence of increasing large artery stiffness in older age)<sup>6</sup>. However, even in many controlled clinical trials the systolic blood pressure target of < 140 mmHg has not been reached<sup>45</sup>.

It is frequently not possible to achieve adequate control of blood pressure with a single drug, with more than two-thirds of patients requiring a combination of at least two antihypertensive agents selected from different classes<sup>27,28,46–48</sup>. For example, in ALLHAT, 60% of patients who achieved a BP value of  $\leq$  140/90 mmHg received at least two agents, while only 30% of patients achieved control of BP with a single drug<sup>27</sup>. Achieving blood pressure goals in hypertensive patients with very high baseline BP or meeting the more stringent BP targets for patients with high cardiovascular risk may require the use of three or more antihypertensive drugs. Physicians must be prepared to modify therapy to achieve BP goals by substituting a drug with proven efficacy from a different therapeutic class, especially if adverse effects occur, or adding a second drug from a different class to complement the effects of the first drug. While treatment 'turbulence' (any change in medication) is to be avoided as far as possible since it can be associated with diminished treatment persistence<sup>49</sup>, the advantages of adding a second drug in terms of improved efficacy and tolerability should not be overlooked<sup>50</sup>. In this regard, a fixed-dose combination antihypertensive provides the convenience of a single-pill treatment that facilitates medication compliance not only because treatment is kept simple but also because such combinations are generally 15–20% cheaper than the two individual components prescribed separately. However, there is often resistance on the part of physicians to add additional agents, perhaps due to concerns over an increased likelihood of adverse effects or complacency over the BP reduction achieved and the belief that 'some control is better than none at all'. In an analysis of patient management practices in US urban primary care clinics, failure to modify therapy when BP control was suboptimal was identified as a significant departure from guideline recommendations, since 40% of patients were still on monotherapy after 18 months of treatment despite only 33% having achieved the target BP of < 140/90 mmHg<sup>33</sup>. Greater willingness to use combination therapy would clearly help such patients to get to, and stay at, BP goal in a more timely fashion.

In this context, it is of interest to consider initial combination treatment since this might counteract

the reluctance of doctors (and maybe patients) to alter or expand therapy when necessary. According to JNC-7<sup>14</sup>, it is recommended that 'when BP is more than 20 mmHg above systolic goal or 10 mmHg above diastolic goal, consideration should be given to initiate therapy with two drugs, either as separate prescriptions or in fixed-dose combinations. However, caution is advised in initiating therapy with multiple agents, particularly in some older persons and in those at risk for orthostatic hypotension, such as diabetics with autonomic dysfunction'. Most regulatory agencies have not approved this concept due to the fact that most combinations have not been sufficiently investigated as first-line therapies. However, since there is a growing need for combination drugs approved for use as first-line treatments, industry and regulatory agencies should increase their efforts to clarify this important issue.

Finally, in addition to modifying therapy, the need for rigorous patient follow-up and a willingness to answer questions and discuss perceived problems cannot be over-emphasised. In patients failing to respond to seemingly adequate BP-lowering therapy, it may be possible to identify the specific barrier to adequate BP control by, for example, questioning the patient about medication compliance, ingestion of other medications that may alter BP, and whether lifestyle changes are being achieved<sup>14</sup>. Physicians should also be aware that forgetfulness is the single most important reason for non-compliance<sup>51</sup>. Multiple strategies exist to cope with this problem including involvement of the family or specific nursing services to increase medication use. Current guidance from the Institute for Clinical Systems Improvement (ICSI) recommends several possible options to improve long-term adherence, including simplifying the regimen (e.g. less frequent dosing or use of combination medications), use of adherence aids (e.g. pill boxes, alarms), sending reminders for medication refills and appointments, cuing medications to daily events (e.g. breakfast, bedtime), regular physician follow-up, and active involvement of family members<sup>52</sup>.

### Patient-related factors

Patient-related factors that may give rise to poor BP control include: (1) a lack of awareness of hypertension and its relevance for one's individual health; (2) excessive consumption of alcohol, NaCl or intake of drugs or 'natural' products that can affect BP (e.g. corticosteroids, nonsteroidal anti-inflammatory drugs, phenylpropanolamine analogues, liquorice and herbal preparations such as Ma Huang, 'herbal ecstasy', and St John's Wort); (3) poor compliance with recommended lifestyle changes and (4) poor medication compliance. While the first two factors can also be influenced by

the physician, who has the obligation to inform and motivate the patient, poor compliance with lifestyle changes and drug therapy is strongly dependent on the individual patient.

The relationship between lifestyle and the development of coronary heart disease was clearly illustrated in the Nurses' Health Study, which showed that women who adopted at least one of the characteristics of a healthy lifestyle (not smoking, moderate alcohol consumption, exercising regularly, not being overweight or following a good diet), had an 83% lower risk of developing heart disease than women who did none of these<sup>53</sup>. However, it is notable that only 3% of these women adopted all of the characteristics of a healthy lifestyle and only 13% adopted three or more characteristics. Similarly, it is estimated that only 22% of US adults undertake physical activity of any intensity at least five times a week for at least 30 min and approximately 25% report no physical activity at all in their leisure time<sup>54</sup>. The difficulty inherent in achieving lifestyle modification was illustrated in a study of adherence to a reduced-salt diet in individuals with mildly elevated blood pressure<sup>55</sup>. Despite receiving intensive counselling and free supplies of low sodium bread, only 20% of participants achieved a urinary sodium excretion level of less than 74 mmol/24 h corresponding to a salt intake of 5 g/day. Similarly, in a study of the effects of addition of the Dietary Approaches to Stop Hypertension (DASH) diet to established behavioural intervention, 28% of patients met the goals for sodium reduction, 34% met the weight reduction target and 34% met the target for fruit and vegetable consumption<sup>56</sup>. Nevertheless, patients receiving established behavioural interventions plus the DASH diet had a mean reduction in systolic blood pressure of 11.1 mmHg, which was greater than with standard behavioural interventions (-10.5 mmHg) or advice alone (-6.6 mmHg). These findings indicate that lifestyle intervention can reduce blood pressure even if patients do not achieve all of the goals.

Poor medication compliance has been observed in up to 50% of hypertensive patients in the community setting<sup>57,58</sup>. Consequently, poor compliance has been identified as a major cause of inadequate BP control and a key reason as to why outcomes reported in controlled therapeutic trials (where compliance rates are higher than in community settings<sup>57</sup>) are not being achieved in everyday clinical practice. For practical purposes, it is necessary to determine whether non-compliance is related to forgetfulness or to one of several other factors, such as patient attitudes, beliefs and knowledge about hypertension, occurrence of unacceptable adverse effects, the complexity of the treatment regimen (i.e. the number and timing of tablets that need to be taken per day), treatment

'turbulence', dissatisfaction with the physician or treatment prescribed, lack of healthcare system support and concerns over treatment costs<sup>49,59,60</sup>. In particular, the occurrence of adverse effects is commonly cited as a reason for poor compliance<sup>60</sup>, which suggests that drugs with improved tolerability profiles could offer important advantages in this situation. Several studies have supported this concept and shown that long-term persistence with antihypertensive drug therapy varies depending on the drugs used<sup>49,61-63</sup>. For example, a study of patients with newly-diagnosed hypertension showed that compliance during the first 6 months was 80% for diuretics, 85% for beta-blockers, 86% for calcium-channel blockers and 89% for ACE inhibitors<sup>49</sup>. Similarly, a retrospective follow-up of outpatients with newly-prescribed antihypertensive therapy showed that the likelihood of good compliance ( $\geq 80\%$ ) was almost twice as high in patients using newer agents such as ACE inhibitors (odds ratio 1.9) or calcium channel blockers (odds ratio 1.7), compared with thiazide diuretics<sup>61</sup>. In addition, good compliance was more likely if patients had co-morbid cardiac disease (odds ratio 1.2) and made multiple visits to their physician (odds ratio 2.2) and less likely in those receiving multiple drugs (odds ratio 0.4). ARBs are the newest class of antihypertensive drugs and appear to be better tolerated than other agents<sup>64</sup>. Several studies have shown that patients receiving ARBs have higher rates of persistence and are less likely to switch drugs than patients receiving other agents<sup>64</sup>. For example, a 24-month retrospective claims database study showed that patients receiving valsartan were more likely to remain compliant on the regimen (77%) than those receiving ACE inhibitors (73%), calcium antagonists (72%) or thiazide diuretics (70%)<sup>63</sup>.

## Conclusion

Achieving adequate reductions in blood pressure is essential if we are to reduce the risk of cardiovascular morbidity and mortality in patients with hypertension. Achieving this objective requires close attention to the obstacles that can prevent blood pressure control. Achieving good blood pressure control should begin with a thorough initial investigation, which provides an opportunity to select therapeutic interventions appropriate to each individual patient, assess potential barriers to compliance, and provide education and sources of support. Selection of an initial regimen with a good tolerability profile may help to improve compliance. Equally important is that patients are followed up regularly to confirm that they are adhering to the management plan and that BP targets are being met. Regular and effective follow-up also permits

prompt adjustments to regimens and, if necessary, intensification of treatment.

With attention to the management issues described above, BP control should be achievable in a relatively short period of time in the majority of patients with hypertension in everyday clinical practice. In doing so, it will be possible to reduce the burden of cardiovascular disease and improve patient lives, a strategy that has important medical and economic implications.

## Acknowledgements

**Declaration of interest:** Funding for this manuscript was provided by Novartis Pharma AG. The author would like to acknowledge editorial support provided by ACUMED.

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 Paper CMRO-3521\_2, *Accepted for publication*: 22 June 2006  
*Published Online*: 30 June 2006  
 doi:10.1185/030079906X120995