

Antihypertensive treatment – navigating between cost, compliance and complications

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Arterial hypertension is a highly prevalent disorder worldwide [1] and one of the most important risk factors for the occurrence of cardiovascular events, including atrial fibrillation, stroke, myocardial infarction and congestive heart failure [2–4]. The incidence of elevated blood pressure is expected to increase further in the years to come owing to the ageing of the population and the rapidly increasing prevalence of obesity. Fortunately, blood pressure lowering treatment in patients with hypertension is highly effective in reducing the occurrence of cardiovascular complications [5].

Accordingly, blood pressure control among patients with hypertension is strongly recommended by all relevant guidelines and of major public health importance. Given the high prevalence of the disorder and the number of drugs usually needed to achieve blood pressure control, it is clear that this therapy induces a substantial cost burden to the health care system, as highlighted in the current paper. Schäfer and Scheuner, the authors of the research article now published in the Swiss Medical Weekly [6], calculated average day-therapy costs for blood pressure lowering drugs and found these costs to be 1.20 CHF per day. The obvious question now is whether this price is too high or too low. This question is difficult to answer if only this metric is taken into account, because in this calculation, the cheapest patient would be the one not receiving any drug treatment, a clearly undesirable goal. On the other hand, when we take into account that complications of elevated blood pressure do cost a lot of resources as well, one could argue that more money should be spent to correctly treat the large number of hypertensive patients who are not currently treated at goal or are not even aware that they are hypertensive.

Overall, saving money without compromising the outcome of patients is certainly desirable. In this context, the authors conclude that a substantial amount of money can be saved when single pill combinations are used. However, this statement does only apply if these combination drugs are actually available and desirable. It is certainly true that in uncomplicated hypertension, single pill combinations are useful if available, because they reduce the pill burden and subsequently may improve compliance. However, in patients with heart failure, for example, several blood pressure lowering drugs need to be titrated individually and pill

combinations are either not available or not desirable. So the true cost savings are unclear.

The authors also state that a substantial amount of money is wasted by reduced patient compliance. While this statement is certainly correct, some doubts remain about the methodology used for compliance assessment and the actual numbers given. The model used to calculate compliance was entirely based on the daily dosing frequency. However, as opposed to pill count, dosing frequency is usually not reduced when combination pills are used, and I am not sure whether the reduction in pill count has the same effect as the reduction of dosing frequency. Furthermore, compliance also strongly depends on the drug class used, with newer and more expensive drugs usually showing better compliance and persistence rates [7]. This important point has not been taken into account in the current estimation model.

So how can we save money and still optimally treat patients with essential hypertension? First, the costs of cardiovascular complications are substantial, and reducing these complications by appropriately treating elevated blood pressure saves a substantial amount of health care costs. Second, aggressively implementing lifestyle factors such as weight loss, smoking cessation and the use of a healthy diet improves the cardiovascular risk profile of hypertensive patients, may reduce the number of drugs actually needed and may help to avoid the occurrence of cardiovascular complications. Third, using generically available as opposed to original drug compounds will also reduce costs. Fourth, patient education is of crucial importance. Only patients who understand why they should take drugs over a prolonged period for an asymptomatic disorder actually take the drugs. Finally, more research is needed in order to define cost-effective treatment strategies for patients with arterial hypertension.

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References

- 1 Kearney PM, Whelton M, Reynolds K, Muntner P, Whelton PK, He J. Global burden of hypertension: analysis of worldwide data. *Lancet*. 2005;365:217–23.
- 2 Conen D, Ridker PM, Buring JE, Glynn RJ. Risk of cardiovascular events among women with high normal blood pressure or blood pressure progression: prospective cohort study. *BMJ*. 2007;335:432.
- 3 Conen D, Tedrow UB, Koplan BA, Glynn RJ, Buring JE, Albert CM. Influence of Systolic and Diastolic Blood Pressure on the Risk of Incident Atrial Fibrillation in Women. *Circulation*. 2009;119:2146–52.
- 4 Lewington S, Clarke R, Qizilbash N, Peto R, Collins R. Age-specific relevance of usual blood pressure to vascular mortality: a meta-analysis of individual data for one million adults in 61 prospective studies. *Lancet*. 2002;360:1903–13.
- 5 Turnbull F. Effects of different blood-pressure-lowering regimens on major cardiovascular events: results of prospectively-designed overviews of randomised trials. *Lancet*. 2003;362:1527–35.
- 6 Schäfer H, Schenert U. Costs of current antihypertensive therapy in Switzerland: an economic evaluation of 3,489 patients in primary care. [Swiss Med Wkly. 2013;143:w13854](#).
- 7 Naderi SH, Bestwick JP, Wald DS. Adherence to drugs that prevent cardiovascular disease: meta-analysis on 376,162 patients. *Am J Med*. 2012;125:882–7 e1.