

# Hypertension treatment for older people-navigating between Scylla and Charybdis

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# Hypertension treatment for older people – navigating between Scylla and Charybdis

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Abstract:

Hypertension is a common condition in older people, but is often one of many conditions, particularly in frail older people, and so is rarely managed in isolation in the real world – which belies the bulk of the evidence upon which is treatment decisions are often based. In this article, we discuss the issues of ageing, including frailty and dementia, and their impact upon blood pressure management. We examine the evidence base for managing hypertension in older people, and explore some therapeutic ideas that might influence treatment decisions and strategies, including shared decision making.

Hypertension is one of the most common long term conditions, with a prevalence of 50% in community dwelling people aged 65 years or older [1]. Clinical trials in older people, with blood pressures (BPs) usually >160/100mmHg, have convincingly shown that the risks of myocardial infarction and particularly stroke are reduced in those whose BP is lowered compared with those in whom it is not. A meta-analysis of 15 trials of people aged ≥60 (n=24,055) showed that treatment was associated with a relative risk (RR) for cardiovascular morbidity and mortality of 0.72 (95% CI 0.68, 0.77) and RR for total mortality of 0.90 (95% CI 0.84, 0.97) [2]. On the face of it, this is good news for older people, for whom cardiovascular disease is a major cause of both premature death and long-term disability.

In a paired article from Cushman and Johnson (ref JAGS…), the empirical evidence on managing hypertension in robust community dwelling older people is discussed, with particular reference to the recent American College of Cardiology (ACC) and the American Heart Association (AHA) hypertension guidelines. In this paper, we address the complexity of applying the evidence base to cohorts of older people who have not been fully studied in the existing trials.

*Why older people might be different*

The structure and function of the vascular tree changes with advancing age. Arteries narrow as a result of atherosclerosis, but also stiffen, leading to differences in how the systolic pressure wave is propagated through the arterial tree. The loss of diastolic augmentation caused by stiff major arteries leads to a fall in perfusion pressure in the coronary arteries, and changes in cerebrovascular circulation lead to reductions in cerebral perfusion reserve.

Whilst low blood pressure may be a sign of overt cardiovascular disease, cerebrovascular disease or frailty [3,4], observational studies suggest that all-cause mortality may be higher in those with low blood pressure even after accounting for the above factors [5].

Reduced perfusion pressure in those with lower blood pressure may combine with reduced cerebrovascular and coronary perfusion reserve to cause cerebral and/or myocardial ischaemia [6], with consequent harms including myocardial infarction, heart failure, arrhythmia and accelerated cognitive decline.

*Adverse effects of anti-hypertensive therapies*

Given that lower might not always be better for older people, it therefore follows that excessive lowering of blood pressure might not be of benefit. Trials here show mixed effects, but the quality of evidence supporting a target of 140/90mmHg in very old people is low [7]. Of particular note is the HOPE-3 trial [8], where net benefits were seen only in patients with a baseline systolic blood pressure over 143mmHg. Although aggressive blood pressure lowering in the SPRINT trial [9] did result in lower rates of cardiovascular events and all-cause mortality in relatively robust older people, rates of kidney injury and syncope were higher.

Orthostatic hypotension is a major factor contributing to falls in older people, and can be exacerbated by antihypertensive drugs [10]. There is not only a lack of consensus as to whether the treatment of hypertension is beneficial in older patients with established cognitive impairment, but there are concerns that antihypertensive treatment may in fact accelerate cognitive decline [4,11]. Hypertensive patients who develop dementia have a paradoxical fall in blood pressure just prior to diagnosis, potentially as a result of autonomic dysregulation [4]. This fall in blood pressure could induce cerebral hypoperfusion as a result of reduced perfusion pressure, worsening dementia [12,13].

*Applicability of existing trial evidence*

At the heart of the debate is the extent to which older participants in hypertension trials truly represents older patients that present with hypertension in clinical practice. Participants in the Hypertension in the Vey Elderly trial (HYVET) were all aged over 80 [14], but had lower mortality than would be expected for this age group; they had much

lower levels of diabetes and cardiovascular disease. Patients in SPRINT were young in comparison to patients in geriatric medicine practice, with a mean age of 68 years. They had good baseline renal function, little cardiovascular disease, and patients with heart failure, diabetes or dementia were excluded. Whilst the study populations are therefore clearly not representative of the burden of multimorbidity found in older people in geriatric medicine services, both HYVET and SPRINT conducted subgroup analyses examining the impact of frailty on treatment effect [15,16]. In HYVET, increasing frailty was associated with bigger treatment effects from blood pressure lowering; frailty status or gait speed had no association with treatment effect size in SPRINT.

*Navigating guidelines*

Although there is plenty of guidance on how to manage hypertension [1, 17, 19], few guidelines have been developed specifically for management of hypertension in older people where the risk-benefit calculus surrounding the decision to treat are likely to be more nuanced. Most guidelines do not take into account competing comorbidities and associated polypharmacy [19], and tend to take a 'one size fits all' approach, based in large part around a rigid target of 140/90 mmHg. More recent guidance has thankfully started to take a welcome step away from this rigid approach, recognising that high-quality evidence for such rigid targets is lacking in older people [7], and acknowledging the potential for harms with stringent blood pressure control. More recent guidance suggests a target of 150/90, based in part on results from HYVET, and influenced also by results from SPRINT.

There is however scope for more flexibility in guidelines than this. Even in the absence of strong evidence, guidance on prescribing can take into account factors important to patients, such as their personal preferences, their degree of frailty, and their likely lifespan in which to benefit from treatment. For those with advanced dementia, but also other conditions that severely limit life expectancy (e.g. advanced frailty), avoidance of cardiovascular events may not a priority for patients – and indeed the short time available

for treatment to have an effect will further minimise any potential benefit. Such approaches are being taken by prescribing guidance such as the Scottish Polypharmacy guidance [20], and there are elements of this approach that could easily be incorporated into hypertension guidelines. Limited evidence exists to support this approach – but evidence in favour of aggressive hypertension treatment of frail, very old patients with limited life expectancy is similarly lacking.

Should we then perform more trials to fill this gap in our evidence base? Or is it better to extrapolate evidence and rely upon logic – particularly as trials in frail older people will take 10 years to impact upon practice, may prove very difficult to recruit to, and harm may be happening now. Observational data can help, but debate on this issue continues after over 20 years of observational work, and the value of such approaches data remains dogged by residual confounding. New trials may well be of value, but perhaps need to reflect how we practise more closely. This means enrolling more typical, unselected populations (perhaps using cohort RCT designs [21]), and examining prescribing strategies rather than individual medications. Examples would be intensive versus less intensive blood pressure control, but also trials of deprescribing in the oldest, most frail populations.

*Shared decision making framework*

The decision as to whether to take antihypertensive medication must be a shared one, and many older people will have views on where balance between risks and benefits sites for them as individuals. Not everyone who takes antihypertensive medication avoids cardiovascular events – and the majority of patients who take medication would not have had an event without medication. For patients to make an informed decision about whether to accept treatment, the size of the benefits and harms for them as individuals must be appropriately communicated, and number needed to treat approaches, with appropriate decision aids can help here. 125 patients with a systolic blood pressure (SBP) of 170mmHg have to be treated for five years to prevent one death [22]. Fewer (67) need to be treated to prevent a stroke [22] and fewer still (48) to prevent heart failure [23]. Antihypertensive

medication can cause harm, but harms are often poorly reported in clinical trials, and if reported are confined to idiosyncratic harms rather than problems of relevance to patients such as falls, fractures, dizziness and hospitalisation due to side effects.

*Concluding remarks*

In Greek mythology, intrepid seafarers had to navigate a treacherous course between the sea monster Scylla, and the whirlpool, Charybdis. Just as sea navigation in ancient Greece was fraught with uncertainty, the evidence around antihypertensive treatment for older people is imperfect – as is the case for so many areas of our practice. Despite this, and the need to provide high-quality evidence that is directly relevant to older, multimorbid patients, there are ways that clinicians can successfully navigate the complexities of managing hypertension in older people. A more person-centred approach is required – precision medicine is not all about biomedical pathways, but should take account of the life course and context, and should place patient priorities and patient choice at the centre of the decision-making process. This then is the key to avoiding both the Scylla of unthinking application of guidelines and the Charybdis of therapeutic nihilism.

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