Randomised controlled trial

Home blood pressure monitoring with patient-initiated drug titration reduces blood pressure in high-risk patients with hypertension

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Context

In patients with uncomplicated hypertension, home blood pressure (BP) monitoring combined with medication self-titration has been shown to substantially reduce BP.[1] It is unknown whether a similar intervention is effective in high-risk patients with hypertension.

Methods

Patients (n=555) aged ≥35 years with a BP ≥130/80 mm Hg, but ≤180/100 mm Hg (treated with 0–3 antihypertensive drugs) and ≥1 high-risk condition were randomly assigned to home BP monitoring with patient-initiated drug titration (intervention arm) or standard care. In the intervention arm, patients and their general practitioner (GP) developed an individualised three-step titration plan at baseline. Patients then measured home BP daily for the first week of each month. Four or more elevated home BP readings (≥120/75 mm Hg) for two consecutive months prompted contact with their GP to initiate medication titration pursuant to the plan. Actual medication changes were left to the GP's discretion. Patients assigned to standard care were encouraged to schedule a GP appointment for routine care. The primary outcome, systolic BP difference at 12 months, was based on automated clinic BPs measured by research staff unblinded to treatment assignment.

Findings

Eighty-one per cent of enrolled patients completed the study. Baseline characteristics, including BP (mean, ~144/82 mm Hg) and high-risk cardiovascular comorbidity frequency, were similar between treatment arms. The most common high-risk comorbidity was diabetes (~45%); one in five patients had multiple high-risk comorbidities. After 12 months, mean systolic BP was 9.2 mm Hg (95% CI 5.7 to 12.7) lower in the intervention arm (mean, 128.2 mm Hg) compared with standard care (137.8 mm Hg); mean diastolic BP was 3.4 mm Hg (95% CI 1.8 to 5.1) lower in the intervention arm.

Commentary

The 1-year results of this well-designed study show that combined home BP monitoring and patient-initiated antihypertensive titration can be effective and safe in those with cardiovascular comorbidities. However, 97% of participants were white, most were above average in socioeconomic status and none had resistant hypertension (a common high-risk BP phenotype), thus significantly limiting generalisability. Nevertheless, these results extend previous findings to those with high cardiovascular risk.[1]

The authors' use of the term 'medication self-titration' may be misleading. Patients did not titrate their own antihypertensive regimen; rather, they initiated a titration by contacting their GP when their BP remained uncontrolled. Presumably, patients contacted their GP as instructed and the GP acted on the elevated BP readings, but these data were not reported.

Regardless, it seems intuitive that combining home BP monitoring with protocolised treatment could be effective in reducing BP in a wide range of patients with hypertension. Home BP monitoring, per se, is associated with a modest reduction in BP.[2] Likewise, experience from hypertension clinical trials demonstrate that forced-titration protocols generally result in more aggressive antihypertensive use and corresponding greater BP reductions. This latter point is particularly salient because home monitoring accompanied by treatment advice (but no prespecified treatment protocol) may not be very effective.[3]

Perhaps the most intriguing aspect of the TASMIN-SR study is that of patient engagement, which was encouraged through continuous feedback (home monitoring), shared decision-making (titration plan) and patient responsibility for initiating titrations. Although not reported explicitly, a relatively high level of engagement can be surmised from the significant changes in antihypertensive use over time. However, <8% of those meeting criteria to participate were ultimately enrolled and ~18% of patients assigned to the intervention arm (vs ~11% in the standard care arm) dropped out within 6 months. Moreover, two-thirds of those declining participation specified that they did not want to perform home monitoring or self-management. Thus, patient engagement is likely a strong determinant of the feasibility and success of this strategy.

Implications for practice

From a value perspective, home BP monitoring with medication titration has obvious appeal.[4] Likewise, patient engagement can improve self-efficacy, adherence and outcomes. The authors suggest that ~20% of patients with hypertension may be candidates, but further research is needed to identify those most likely to benefit from this intervention before it can be implemented widely. Additionally, financial impediments may exist in some countries. For example, in most USA practices, current healthcare financing largely supports an office visit-based model, whereby fewer office visits reduce net reimbursement, potentially creating financial disincentives for such a model.

Competing interests None.

Provenance and peer review Commissioned; internally peer reviewed.

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