

Self-monitoring and medication self-titration of systolic blood pressure in hypertensive patients at high risk of cardiovascular disease

Full reference and link to full text of paper

McManus RJ, Mant J, Haque MS, Bray EP, Bryan S, Greenfield SM, Jones MI, Jowett S, Little P, Penaloza C, Schwartz C, Shackelford H, Shovelton C, Varghese J, Williams B, Hobbs FD, Gooding T, Morrey I, Fisher C, Buckley D. Effect of self-monitoring and medication self-titration on systolic blood pressure in hypertensive patients at high risk of cardiovascular disease: the TASMIN-SR randomized clinical trial. *JAMA*. 2014; **312**:799-808

(This includes four authors added after publication)

<https://jamanetwork.com/journals/jama/fullarticle/1899205> (open access)

Summary

Poorly controlled high blood pressure is a risk factor for serious health problems including stroke and heart attack. Hypertension is usually managed in general practice and many patients monitor their own blood pressure. Earlier trials had shown that self-monitoring and self-titration of blood pressure was effective in reducing blood pressure, but these trials did not include higher risk patients such as those who had already had a stroke, coronary heart disease or chronic kidney disease.

This was an unblinded (because participants and doctors had to be aware of what they were doing) randomised-controlled trial. 552 patients were randomised using an internet-based service with telephone backup. After 12 months, 220 patients in the intervention group and 230 in the control group attended the final follow-up appointment. After 12 months, the mean blood pressure had reduced to 137.8/76.3 mm Hg in the control group and 128.2/73.8 mm Hg. A difference of 9.2 mm Hg (95% CI, 5.7-12.7) systolic and 3.4 mm Hg (95% CI, 1.8-5.0) diastolic blood pressure. This was through additional use of blood pressure lowering medication in the participants in the self-titration group. This trial showed that self-monitoring and self-titration of blood pressure is effective in lowering blood pressure in high-risk patients.

PICO

Population: 552 patients from 59 UK general practices, who were at least 35 years old, with baseline blood pressure of at least 130/80 mm Hg and with a history of stroke, coronary heart disease or chronic kidney disease.

Intervention: Self-monitoring of blood pressure and self-titration of blood pressure medication using a personalised plan with a target of 120/75 mm Hg. Participants received around 2-3 hours of training then agreed a protocol for self-monitoring and self-titration with their GP.

Control: Usual care which was routine blood pressure management from their GP with a target of 130/80 mm Hg.

Outcomes: Difference in systolic blood pressure between intervention and control group after 12 months.

Key Researcher

Professor Richard McManus is an NIHR Professor and leads a programme of research around self-monitoring of blood pressure. He is also a part-time GP partner at a general practice in Oxford. He chairs the Blood Pressure Monitoring Working Party of the British Hypertension Society, and provides expert advice to NICE and the European Societies of Hypertension & Cardiology.

Images



Impact

This paper won the cardiovascular and respiratory category of the RCGP research paper of the year award for 2014.

Thinking points

1. The participant flow diagram is interesting. 7411 patients were invited to take part but only 450 ended up in the final analysis. Also of the 2003 patients who responded to the invitation to decline to participate, 639 (32%) did not want to measure their own blood pressure.
2. Minimization, a method of adaptive stratified sampling that balances the different groups of clinical trials simultaneously for several factors, was used to balance treatment allocation by family practice, sex, age, high-risk group, and baseline systolic blood pressure, factors chosen due to their potential influence on systolic blood pressure. This means that the computer programme used for randomisation checked during randomisation whether assigning the patient to a particular arm would cause an imbalance in any of these factors and attempted to minimise imbalance.
3. The blood pressure target for the self-management arm of the trial was lower. This was due to a change in blood pressure guidelines between the writing of the study protocol and the start of the trial. The usual practice arm had to follow usual practice which meant a higher target. So the intervention was self-monitoring and self-titration with a lower blood pressure target.
4. This journal is based in the USA so the North American term “family physician” is used in place of general practitioner, despite it being a UK-based study. Except once, where this is missed!