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Home + pharmacist BP telemonitoring found successful

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07/02/13



An intervention involving home blood pressure monitoring and case management by a pharmacist achieved better control of hypertension than did usual care provided by a primary-care physician, in a study reported July 3 in JAMA.

This positive effect lasted well beyond the 1-year treatment period and through an additional 6 months of follow-up after the intervention was stopped, said Dr. Karen L. Margolis of HealthPartners Institute for Education and Research, Minneapolis, and her associates.



Dr. Karen L. Margolis

"If these results are found to be cost-effective and durable during an even longer period, it should spur wider testing and dissemination of similar alternative models of care for managing hypertension and other chronic conditions," they said.

The investigators performed the Home Blood Pressure Telemonitoring and Case Management to Control Hypertension (HyperLink) study to determine whether the intervention was safe, effective, and durable in real-world patients "representative of the range of comorbidity and hypertension severity in typical primary-care practice."

The cluster-randomized study was conducted at 16 primary-care clinics in a multispecialty practice that was part of an integrated health system. These clinics had an existing arrangement between primary-care physicians and pharmacists allowing the pharmacists to prescribe and change antihypertensive therapy according to specified protocols.

The clinics were matched by size and randomized to continue usual hypertension care managed by the primary-care physician (8 clinics) or to implement the telemonitoring intervention (8 clinics). A total of 450 patients with uncontrolled hypertension were included: 228 assigned to the intervention and 222 assigned to usual care.

The mean patient age was 61 years. The study population was almost equally divided between men and women, and 82% were white. Comorbidities were common, including obesity (54%), diabetes (19%), chronic kidney disease (19%), and cardiovascular disease (10%). The mean BP was 148/85 mm Hg.

In the intervention group, patients met with pharmacists for 1 hour to review their history, get general information about hypertension, and receive instructions for operating the home BP monitor that stored and transmitted data to a secure website accessed by the pharmacist. These study subjects were told to transmit at least 3 morning and 3 evening BP measurements each week. Pharmacists retrieved the information and altered medications accordingly.

The pharmacists and patients also consulted via telephone every 2 weeks until BP control was sustained for 6 weeks, and then their phone "visits" were decreased to once per month. After the first 6 months of the intervention, phone calls were scaled back to once every 2 months.

At these visits, the pharmacists discussed lifestyle changes, medication adherence, and adverse effects of medication, and they adjusted antihypertensive medications as necessary. They communicated with patients' primary-care physicians through the electronic medical record after each call.

At 12 months, the intervention stopped. Patients discontinued using the telemonitors and returned to the care of their primary physicians.

During this intervention and for 6 months thereafter, the patients made periodic visits to the research clinic so the safety and efficacy of the intervention could be monitored.

The primary outcome was the percentage of patients with controlled BP, defined as <140/90 mm Hg, or <130/80 mm Hg if they had concomitant diabetes or kidney disease.

At 6 months, this outcome was attained by 72% of the intervention group, compared with 45% of the usual-care group. At 12 months, the corresponding rates were 71% and 53%, respectively. And at 18 months, they were 72% and 57%, respectively.

Overall, the intervention group achieved 25%-30% higher rates of BP control than did the usual-care group, Dr. Margolis and her associates said ([JAMA 2013;310:46-56](#)).

Patient satisfaction with care was similar between the two study groups. At 6 months, more patients who received the intervention felt their clinicians listened carefully, explained things clearly, and respected them than did patients who received usual care. However, this difference was no longer present at 12 or 18 months.

Patients who received the intervention were "substantially more confident" than were those who received usual care regarding communication with their health care team, mastering of the home BP monitoring routine, following their medication regimen, and keeping their BP under control.

The intervention group also self-reported that they added less salt to their food than did the control group at all time points, "but other lifestyle factors did not differ" between the two study groups.

Dr. Margolis and her associates calculated that the direct cost of this intervention would total \$1,350 per patient.

This study was limited in that a very large number of potentially eligible patients (nearly 15,000) had to be screened to obtain a relatively small study population of 450 subjects. Also, these study subjects were, in general, well educated and had correspondingly high income levels, and approximately half had used a home BP monitor before, so they were not representative of the general population.

"We conclude that BP telemonitoring and pharmacist case-management was safe and effective for improving BP control compared with usual care during 12 months; and improved BP in the intervention group was maintained for 6 months following the intervention," they said.

"We plan future analyses that will take into account indirect costs during 18 months and long-term cost savings from averting hypertension-related events," they added.

No relevant financial conflicts of interest were reported. HealthPartners Institute for Education and Research has entered a royalty-bearing license agreement to commercialize a simulated learning technology for the purpose of broader dissemination.

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