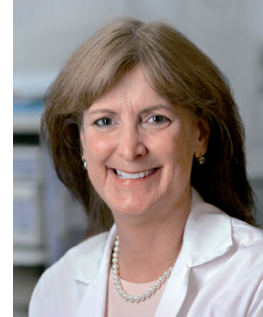


Interview

Web-based care: a new paradigm in hypertension management?



Beverly B Green, MD, MPH, is a practicing family doctor and preventive care specialist at Group Health Cooperative, a large Seattle-based health plan. She is also an affiliate investigator at the Group Health Center for Health Studies, conducting health services research with a focus on cardiovascular disease and cancer screening. She is the primary investigator for a NIH-funded grant awarded to the Group Health Center for Health Studies, testing whether home blood pressure monitoring, secure messaging and pharmacist care improves hypertension control. Dr Green has over 20 years of experience in the development and implementation of evidence-based guidelines, including guidelines on nutrition, exercise, obesity, hypertension, colon, breast and prostate cancer screening, and osteoporosis. She has authored several papers and book chapters on physical activity, obesity and healthy lifestyle change. She received the Glenn Hartquist Award in 1999, awarded to the Group Health physician who has contributed the most to clinical quality improvement, and was a finalist for the Group Health Lifetime Achievement Award in 2004.



Beverly Green

Group Health Center for Health Studies,
1730 Minor Ave, Ste 1600, Seattle,
WA 98110, USA
green.b@ghc.org

■ **How did you become interested in home blood pressure monitoring and internet-based medical care?**

I am a family physician and also a health resources researcher. In the USA, high blood pressure is the most common diagnosis on primary care visits, and I was always perplexed by how poorly we dealt with it. Most people with hypertension have their blood pressure poorly controlled. Even in my own practice, I would sometimes not notice until the end of the day that a patient's blood pressure had been elevated. Or I would notice and bring it up with the patient, but it would not be the emphasis of the visit and the patient might not be particularly interested in making lifestyle changes. Alternatively, I might tell the patient to come back to have their blood pressure measured again, but was never sure whether that really happened. We were interested to explore a new way of treating hypertension by taking it out of the office and into the patient's home by using home blood pressure monitoring and electronic communications.

■ **Tell me about your study on at-home care for hypertension published recently in the *Journal of the American Medical Association*: how was the study conducted and what were the main results?**

It was conducted at Group Health Cooperative (GHC), WA, USA. GHC

have a comprehensive electronic medical record with full functionality and a web interface for patients, allowing them to review portions of their own electronic medical records and send secure messages to their physician and refill medications online. That is usual care at GHC.

We included patients with a hypertension diagnosis, receiving medications for hypertension. Those with access to the internet and an email address were eligible. Provided blood pressure was elevated at two screening visits and the patients were willing, they entered the study. Patients randomized to usual care, including web interface, were told that their blood pressure was uncontrolled and to work with their physician to get it better controlled. We gave them the standard information that GHC provides. The second group were given home blood pressure monitors and training on how to use these, and some training on how to use the web interface service. The third group received the same treatment as the second group, but also received pharmacy care delivered over the website. This is the first hypertension study to integrate patient care over the internet to an existing electronic medical record. At the 12-month follow up visit, those receiving the home blood pressure monitors had a small but significant decrease of 3 points in systolic blood pressure, whereas those receiving the pharmacy intervention had a net decrease of 9 points in systolic blood

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pressure and were 25% more likely to have their blood pressure controlled than the usual-care group. They were also significantly more likely to have their blood pressure controlled than the home blood pressure monitoring and web training group. The thing that surprised us the most was that the patients with the highest systolic blood pressure were more than three-times as likely to have their blood pressure controlled in the multiple intervention group, and their systolic blood pressure dropped by 35 points: the people with the highest blood pressure at baseline showed the greatest improvement.

■ **How did patients feel about the web-based treatment? Were you worried they might find this type of care impersonal?**

We have not interviewed patients so we cannot be sure, but the feedback we had through the pharmacists was that the patients really liked it and were disappointed when the study ended. As well as dealing with prescriptions for blood-pressure-lowering drugs, each pharmacist asked patients to work on one lifestyle change, such as increasing physical activity or reducing salt consumption. Many patients seemed to enjoy reporting back to their pharmacist about these lifestyle changes too. Some felt that their relationship with the pharmacist was like having a personal coach: someone that they were accountable to. The process was not 100% web-based: patients did have one phone call at the beginning of the study, and if the web-based care was not working well for the patient, we would phone them. However, most patients preferred the web-based communication, since it does not require that the patient and pharmacist be available at the same time. Most patients were in full-time employment so it was convenient for them. I also think it marks a shift in how we view communication over time, and people are feeling increasingly comfortable with web communication.

■ **On the whole, what has been the reaction from physicians to home-based monitoring and web-pharmacy treatment?**

We were concerned whether this would affect the patient–physician relationship, but we have found no evidence of that.

Patients are used to a team-based approach where they might work with a nurse as well as their physician, and they perceived the pharmacist to be part of this physician care team. In fact, the pharmacist usually was not part of their physician care team – there were only three pharmacists to ten clinics. However, whether they physically resided in the same clinic did not seem to matter for this remote communication system. Pharmacists initially sent electronic copies of all correspondence to the physician, although this was scaled back over time to include only those messages requiring action by the physician. All communications (secure messages between the pharmacist and the patient) were part of the patient’s medical record. From the patient perspective, they had a sense that their physician was involved, and on visiting their physician, those messages were available to review. It is a very efficient system. One of the main problems with normal care, which I am aware of as a family physician, is that I will make adjustments to a patient’s medication and schedule an appointment for 2 months time, but I have little follow-up until then. In the few days after the appointment, they might have a problem with the medication; they may not notify me, and might even stop taking the medication until our next appointment. The web pharmacist improved availability and gave instant feedback, making the patients feel more invested in their own care and allowing us to respond promptly to the individual needs of the patient.

Some physicians do like to have a lot of autonomy, and might be reluctant to give up any control of patients’ treatment, but that is not something we found in this study.

■ **What are the main advantages and limitations of this system compared with standard care?**

The main advantages were that patients could be more involved in their own care, monitoring their own blood pressure to determine whether their treatment was working, and having email contact to deal with their problems. It transfers care from the office to the patient’s home, where most self-care for chronic conditions occurs, which was more convenient for working people.



In terms of limitations, this type of treatment is not feasible for everyone: there is a digital divide in terms of access to the internet. Older patients, for example, were less likely to have internet access and an email address. Fewer people with low incomes and ethnic minorities have internet access than in the general population. Those factors are unlikely to change in the near future, whereas the older patient population is likely to become more internet-savvy. All patients in this study had health insurance, and medications were available for a small co-pay. Results might be different in an uninsured population.

■ **Do you see home monitoring and web-pharmacy becoming widespread in treating chronic conditions in the next 10 years?**

I think it is already happening. It was not surprising to me that the internet would become integrated into medical care: we already bank and shop online. In our

healthcare system we are finding that once people have used these systems they love them and would never go back to any other way. It is like the difference between word processing and using a typewriter: it is so much more convenient. Following the study, our healthcare system is integrating these capabilities into its standard care. There are also ongoing studies using these systems for depression, HIV treatment, diabetes and other chronic conditions. These systems are already available; this study was just a way to measure their effectiveness.

Financial & competing interests disclosure

The author has no relevant affiliations or financial involvement with any organization or entity with a financial interest in or financial conflict with the subject matter or materials discussed in the manuscript. This includes employment, consultancies, honoraria, stock ownership or options, expert testimony, grants or patents received or pending, or royalties.

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