

Biggest value of patient-measured BP? Preventing false positives

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Hypertension costs the U.S. health care system more than \$52 billion annually, in part because it goes undiagnosed in 10–20% of patients and uncontrolled in more than half of people who have it. Self-measured blood pressure (SMBP) is used in numerous ways to diagnose and control high blood pressure, but for more insurers to cover it, they need research showing which uses are most cost-effective.

For a [study](#) published in *PLOS One*, researchers estimated the financial effects associated with insurance coverage of SMBP devices at one-year, three-year and lifetime horizons. The study was co-written by AMA experts Gregory Wozniak, vice president of health outcome analytics, Stavros Tsipas, senior data analyst, and Michael Rakotz, MD, vice president of health outcomes, along with authors from Florida International University Indiana University.

The researchers compared [SMBP](#) with clinic blood pressure monitoring (CBPM), in which hypertension is diagnosed and managed based solely on episodic CBPM. They estimated the return on investment and net present value (NPV) associated with coverage of SMBP devices when used:

- Only to diagnose hypertension.
- Only to select and titrate medication.
- Only to monitor hypertension treatment.
- As a bundle, with all three uses combined.

Thinking beyond monitoring

The authors used Framingham risk predictions and published sensitivity-specificity values of SMBP and CBPM and a national sample of claims data to develop a simulation model to determine the economic value of the uses of SMBP when scaled to the U.S. adult population.

When the three uses were considered together, coverage of SMBP devices yielded a one-year NPV of \$190, a two-year NPV of \$229 and a lifetime NPV of \$254. NPV is simply the present-day value of the expected cash flows minus the present-day value of the amount originally invested.

While these results make a strong economic case for insurers to cover the cost of SMBP devices, the authors noted that the success of SMBP depends largely on how the devices are used.

“Although SMBP is most often used as a tool to monitor blood pressure in those under treatment for HTN [hypertension], we find that the primary economic value of SMBP from an insurance perspective comes from its use in diagnosing new-onset HTN and in selecting and titrating medication, not from ongoing treatment monitoring,” they wrote.

Getting better data

In fact, the most compelling effect is more accurate diagnosis, the authors noted. By their analysis, SMBP would prevent false-positive diagnoses of about 420 patients in a population of 1,000, which could avert unnecessary treatment of some 221 people per 1,000.

“When scaled to the U.S. population, adoption of SMBP would prevent nearly 16.5 million FP [false-positive] diagnoses, and 8.2 million unnecessary treatments,” the authors wrote. If CBPM were to be used instead, these patients would be “falsely diagnosed as hypertensive and exposed to the costs and risks associated with lifelong medication usage. This is a direct effect of the greater diagnostic specificity of SMBP.”

In addition, the authors noted, in a population of 1,000, SMBP would also put about 15 additional hypertensive individuals under treatment, an effect attributable to its slightly better sensitivity than CBPM, resulting in an average 1,063 fewer nonfatal cardiovascular disease events per 100,000, mainly in older age groups.

Accuracy is everything

The authors assumed patients used validated SMBP devices. However, the vast majority of BP measurement devices are not validated for accuracy. Visit the U.S. Blood Pressure Validated Device Listing (VDL™) at [validatebp.org](https://www.validatebp.org) for a list of American BP measurement devices that have been validated for clinical accuracy.

It's also crucial that physicians give guideline-driven patient education/user instructions. The AMA's 7- step SMBP quick guide



is an evidence-based resource to help physicians and care teams start using SMBP, including links to practical implementation tools.