App claims to track blood pressure through a smartphone camera

Health platform Binah.ai announced this week that it added blood pressure monitoring to the suite of health tools available on its app, which is available through partnered businesses. The company says it can calculate blood pressure using only video of someone's face through a smartphone or laptop camera — but experts say they need to see significantly more data from the company before they'd trust the feature.

Tracking blood pressure without the usual cuff is a longstanding goal for cardiologists and tech companies — it would eliminate a step in the process and could help people monitor their blood pressure at home more easily, which could be useful for people with some heart conditions. "We designed this to replace home cuff devices," says David Maman, CEO and co-founder of Binah.ai.

To monitor blood pressure, the tool analyzes the light reflected off of the face to calculate changes in blood flow — a technique called photoplethysmography (PPG). Device and app makers have leveraged that strategy on various body parts to calculate things like blood oxygen levels and heart rate.

Using it for blood pressure, though, is more challenging. Researchers are making progress toward that goal, but experts say that there's still not enough data to show people can rely on this technique clinically. "I think it's potentially feasible this technology could be used in the future, but have not seen evidence to suggest that this technology is at all ready for reliably checking blood pressure at this time,"

Jordana Cohen, an assistant professor of medicine at the University of Pennsylvania who studies hypertension, said in an email to *The Verge*.

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While PPG-based metrics can be good at tracking changes in blood pressure, it's harder to use them to calculate the raw numbers without a baseline. That's why most tools developed to measure blood pressure through PPG use a cuff for calibration. But Binah.ai's approach doesn't use any calibration. "We decided to design everything to work as a medical device," Maman says. "When you have a blood pressure cuff, you don't do any kind of calibration to it – you just use it. I think that's the ideal."

Maman says the company has run internal validation studies of the blood pressure tool in 264 people. That data is not published, but the company shared "a basic accuracy report" with clients, he said. Their evaluation also benchmarked the device against the international standard for blood pressure measuring devices, which has two levels: adequate for a high-accuracy device (like devices used in hospitals) and adequate for a low-accuracy device (like devices that could be used in the home). Binah.ai's monitor uses the low-accuracy device standard, Maman says.

Cohen told *The Verge* that the international standard is designed for typical cuff-based blood pressure monitors and shouldn't be used on its own to monitor the accuracy of a PPG-based tool. She said she'd need to see more published validation data before feeling comfortable with this type of device.

There also needs to be published analysis on how the device works in people with different skin tones, who have facial hair, or who are wearing makeup, said Ann Marie Navar, a cardiologist at the University of Texas Southwestern Medical

Center, in an email to *The Verge*. Not taking care to test artificial intelligence-based tools across multiple skin tones has led to bias in other tools. And while experts know the best body positioning techniques for arm-based measurements, it’s not clear what the best approach would be for the face. “We have no idea what human factors impact the measurement accuracy of this type of approach,” she said.

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Maman says the company will launch a more extensive clinical trial to test the device at the end of February and will use that data to pursue an approval from the Food and Drug Administration. Right now, the app is only able to be used as a wellness device, and the company can’t claim it can be used for medical purposes. Binah.ai also doesn’t sell its products directly to consumers but works with companies like insurers, which implement its tools on their own platforms. Maman says that the company is also working with two leading laptop manufacturers and a smartphone manufacturer to integrate Binah.ai into their devices.

The company decided to launch the feature before they did that additional study because customers told Binah.ai they wanted it. Many customers do their own internal validation on the tools, Maman says. “They say, we’ll check it, and if it’s good enough, it’s good enough.”

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