



## The Doctor On Your Wrist

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You may think that medical costs are going to bankrupt America, and if we assume that Medicare and Medicaid costs will rise as they have for the past 20 years (despite the brief interlude these last three years), then there is reason for alarm. But ask yourself: how much of those costs are related to expensive diagnostic tests? How much are related to fixing major health problems after the fact, when they could have been prevented if we had only known where to look and at what lifestyle changes to make?

What the bean counters are missing when they simply project ever-larger expenditures based on past experience is the enormous impact that wearable diagnostics are going to have on healthcare in general. You already know about Fitbit, which helps you get in shape by tracking the number of steps you take each day and week, and now also tracks heart rate, calories burned and stairs climbed. More recent innovations are the Sensoria smart sock, which diagnoses your running stride and can reliably identify a runner's rookie mistake of heel striking. If you've gone to a hospital to evaluate your endurance, well, you could have used the PerformTech heart-rate monitor, which calculates your endurance simply from five minutes on a stair-stepper.

Not getting enough sleep? Or the right kind of sleep? The Withing's Aura bed pad will diagnose the quality of your REM cycle. An app by SleepRate will tell you when you have restless cycles. If you're one of those people who has trouble getting into meditation, you might try the Muse headband, which contains an EEG device that measures brainwaves, and helps coach you into a state of meditative peace. It also tracks your meditative progress over time.

Wouldn't it be nice if all of these devices were included in the same device? As you read this, ten different companies from around the world are competing for an X Prize that will be given to the first "tricorder," the device from Star Trek that was used to diagnose the damage to crew members after a rough battle with the Klingons. The winner of the Tricorder X Prize will be able to monitor your body temperature, oxygen levels and heart rate, tell if you're anemic, check your blood pressure and perform a constant EEG. It will diagnose common maladies like stroke and less common ones, like tuberculosis.

Meanwhile, if you saw the episodes of Jeopardy where a computer named Watson cleaned up the board, well, you saw the next major diagnostic engine. At this moment, Watson is busy absorbing all the medical literature, and is helping real doctors make proper diagnoses and offer remedies. IBM, the maker of Watson, expects to put the program in the Cloud, where it will be accessible to, among other things, mobile devices.

The combination of the next generation of wearable diagnostics uploading data to Watson for instant analysis will allow all of us to have our health monitored constantly in real time—by affordable devices that are as sensitive as the expensive hospital equipment that currently hits the global healthcare budget so hard. When you begin to have a problem, the wearable device will schedule a medical exam. If you start to experience the early stages of a heart attack or stroke, the ambulance will arrive at your door—before you realize you have a problem. The treatments will be much less expensive, because the problems will be caught in the very early stages.

How many billions of dollars will this save? The bean counters who draw the alarming graphs haven't even started to realize that they're living in the middle of a health care revolution. But now *you* do.

