Blood test can prevent suicide? How to prevent “biomarker porn”

“Can a Blood Test Predict Suicide?” was the blaring headline in The Daily Beast earlier this month. According to the story, “Researchers have found blood biomarkers to help them assess suicide risk.”

Nature recently ran a story, based on a study, headlined, “Biomarkers could predict Alzheimer’s before it starts.”

Another day, another headline about a “simple blood/saliva/skin test” that predicts whether you’ll get a deadly disease. What did these announcements have in common? They identified new biomarkers that promised to determine a disease state before it occurred. They also involved diseases that so far are incurable as in the case of Alzheimer’s, or may be treatable too late, as in the case of Alzheimer’s and suicide. And some scientists believe they exemplify a questionable explosion in announcing gene tests, blood tests and other such biomarkers that haven’t been validated yet—a phenomenon one researcher called “biomarker porn.”

Yet another Alzheimer’s test

A San Francisco- and Swiss-based biotech company, Amarantus Bioscience, earlier this year announced its Alzheimer’s blood test, called LymPro. According to the company, LymPro was designed to measure how well circulating white blood cells (lymphocytes) were able to re-enter the cell cycle. In certain diseases like Alzheimer’s, this normal life-and-death cycle is thrown off and the blood test might very well use this aberration to predict Alzheimer’s. The company emphasized that the test would require clinical validation before it could be available commercially.

But many in the media and other reviewers (including scientific) hailed the announcement. A story in Forbes by Nicole Fisher quoted Howard Federoff, then dean of Georgetown University’s medical school and medical center (which is working with Amarantus on blood-based markers for Alzheimer’s), as “excited there is a means to test people.” Fisher then conjectured whether people would want to know their risk of getting a disease that’s currently incurable. But we’re not there yet. The company’s test results so far look promising. But they’re in early stages, and its latest results involved just 141 people who had their blood drawn.

Further, the LymPro test is one of many in search of a biomarker that could predict Alzheimer’s. Unfortunately, we still don’t know entirely what the early stages of Alzheimer’s disease—without beta-amyloid plaques or Tau proteins, or even marked cognitive difficulties—look like. In order to corral the hype and create some uniformity to the biomarker discovery boom, the Alzheimer’s disease research community, including the National Institute of Mental Health and the Alzheimer’s Association, established a global consortium to harmonize and create standards for biomarkers that could predict various stages of the disease. The hope of this organization is to provide some anchor for the floating genes and proteins that may predict disease—or may predict nothing.

If I say I'm not killing myself, am I lying?

Suicide is a prevalent public health problem worldwide, and it would appear to be preventable. But so far, methods of prevention, including talk therapy and treatment of depression, have not been very effective. So, it was understandable when an announcement about a new blood test was "98 percent" effective at predicting suicide risk was greeted with enthusiasm.

In this case, Indiana University School of Medicine researcher Alexander Niculescu and his team found a group of RNA biomarkers in the blood of 217 patients with a range of serious psychiatric disorders. The blood biomarkers were found among 37 patients who had expressed an intention to commit suicide. The team also matched those biomarkers with patients who had actually killed themselves. The blood test was paired with a questionnaire that asked about mood, anxiety, stress and other issues, was able to predict suicide with up to 98 percent accuracy, the researchers said.

Like the Alzheimer's blood test announcement, this announcement garnered headlines worldwide. And even scientists showed exuberance, including a quote from Johns Hopkins University researcher Zachary Kaminsky, who claimed, "They were able to guess the future for hundreds of people. This is top-notch."

Scientific skeptism

Other scientists are more cautious. Several point to the studies' small samples sizes (no more than 200 people in these cases) and how the small size can easily skew results, especially when working with complex, mysterious mental disorders like Alzheimer's and the various disorders that can lead to suicide.

Commenting on a similar study by Johns Hopkins' Kaminsky that revealed another predictive suicide biomarker, Emory University epidemiologist Cecile Janssens pointed out that "accurate prediction based on a DNA test is only possible when the tested gene has a substantial role in the development of the disease." As we've pointed out in past GLP stories, a clear gene-mental disorder link has not yet been reached.

But enthusiasm to create genetic and physiological predictors of mental disorders that match markers for cancer, Huntington's disease or cystic fibrosis, has garnered even more criticism: "The NIMH is funding biomarker porn," James Coyne, professor of health psychology at the University of Gronigen in the Netherlands, told the New Scientist. "It's airbrushed, heavily edited, and you can't replicate it at home." Coyne has been a persistent critic of excessive exuberance toward research on mental disorders that assign a simplistic cause to complex diseases.

No question, either of these mental disorders is very serious. Every 40 seconds, a person successfully kills him- or herself worldwide. Alzheimer's disease is predicted to affect 13 million people by 2050. But finding and announcing new simple gene, blood or other tests for a small group of molecules doesn't necessarily mean we're moving forward — a non-validated test that raised false hopes could be a step back.

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