Can a Blood Test Gauge Post-Op Recovery Time?

A blood test and a smartwatch activity tracker helped predict how quickly hip replacement surgery patients recuperated.

November 18, 2021 By Jeanette L. Pinnace

For people with severe joint damage from arthritis and other conditions, hip replacement surgery offers a chance to live a life with reduced pain and improved mobility. But doctors find it difficult to accurately assess individuals' recovery from this procedure using the standard surveys administered to patients. But new study findings published in the journal Annals of Surgery showed that data from a simple blood test was able to pinpoint patients' recovery time, reports a press release from Stanford University.

For the study, researchers at Stanford Medicine had 49 people ages 57 to 68 wear a smartwatch with an activity tracker before and after hip replacement surgery. Prior to the operation, scientists recorded activity patterns, including sleep and step count, for each participant. Researchers also checked individuals' blood for cell subtypes and cellular activity to determine protein levels and immune function.

Scientists also tracked patients after the procedure to determine how long it took each person to return to their presurgery activity measurements and then developed an algorithm that could accurately forecast participants' recovery time.

The algorithm's ability to predict patient recovery time was driven by the activity of an immune cell called a myeloid-suppressor cell—in the presence of a molecule that resembled an infection.

Researchers noted that elevated levels of activity were closely linked with quicker recovery times, and individuals who exhibited the strongest immune function before surgery recuperated 34% faster than those with a weaker immune function.

"We needed to find a more reliable, data-driven method to anticipate the precise needs of patients as they get back on their feet after surgery," said Nima Aghaeepour, PhD, an assistant professor of anesthesiology, perioperative and pain medicine at Stanford and one of several lead study authors.

Although the results of the inquiry are just preliminary and applicable only to hip surgeries

conducted in people around age 60, scientists believe the findings are relevant for patients of all ages who undergo other procedures.

“My expectation is that there will still be a strong connection between the immune system and recovery, but exactly what that connection will be is still to be determined,” said Aghaeepour.

Researchers will use the same methods to study patients in other population groups. Their objective is to use blood test analyses to help ensure easier, speedier post-surgery recovery for many different conditions.

To learn more about the diagnostic potential of blood tests, read "A Blood Sugar Test Also Predicts Memory Problems."
