# Blood test could predict disease risk by measuring organ ageing



A recent study has revealed the potential of a simple blood test to predict the risk of significant diseases such as cancer and dementia by assessing the ageing rates of various organs within the body. This study, which involved a collaborative effort among researchers from University College London (UCL), Stanford University, and the University of Helsinki, highlights how biological ageing can be measured and its implications for future health.

The findings were published in the journal Lancet Digital Health and showed that accelerated organ ageing could forecast the likelihood of developing 30 different diseases over a twenty-year period in individuals previously deemed healthy. Notably, the research discovered that a heart exhibiting rapid ageing significantly increased the risk of heart diseases, while accelerated lung ageing was linked to a higher susceptibility to respiratory infections, chronic obstructive pulmonary disease (COPD), and lung cancer.

In a noteworthy conclusion, the study identified that individuals whose immune systems aged faster than normal had the highest risk of developing dementia, challenging earlier beliefs that brain ageing was a primary factor in dementia risk. This aligns with prior research suggesting a connection between severe infections and later dementia risk, indicating that inflammatory processes might play a substantial role in the emergence of neurodegenerative diseases.

Additionally, the study indicated that accelerated kidney ageing was associated with increased risks of vascular diseases, type 2 diabetes, and liver conditions. Conversely, biological ageing in nearly all other organs correlated with a heightened risk of kidney disease.

Professor Mika Kivimaki, lead author of the study and faculty member at UCL, explained: “Our organs function as an integrated system, but they can age at different rates. Ageing in particular organs can contribute to numerous ageing-related diseases, so it’s important for us to take care of all aspects of our health.” Kivimaki emphasised that blood tests of this nature could eventually be pivotal in preventing various diseases, allowing for earlier intervention tailored to individual risk profiles.

The researchers collected and analysed blood plasma samples from 6,235 middle-aged individuals, aged 45 to 69, who participated in the British Whitehall II study. By assessing the biological age of nine organs—specifically the heart, blood vessels, liver, immune system, pancreas, kidneys, lungs, intestines, and the brain—the study measured the discrepancies between each person's chronological age and the biological age of their organs. This approach revealed that the organs frequently aged unevenly within the same individual.

Over a two-decade follow-up period, as participants aged between 65 and 89, many were diagnosed with at least one of the studied ageing-related diseases. The results showed that rapid ageing in one organ often impeded the function of others, explaining the higher incidence of multiple age-related diseases amongst those with a single rapidly ageing organ.

The study presents promising advancements in blood testing technology, known as proteomic testing, capable of measuring thousands of proteins from a single blood sample. Kivimaki noted, “We hope our findings could contribute to new ways of helping people stay healthy for longer as they age,” suggesting that such blood tests could signal the need for improved care of particular organs while serving as early warnings for disease risk.

Despite the promising nature of the study, experts point out that the current costs of the proteomic tests may limit their widespread implementation. David J Clancy, a lecturer in biogerontology at Lancaster University, acknowledged the quality of the study but mentioned that the tests are likely to remain expensive, potentially reserving them for individuals already at high risk due to lifestyle factors or genetic predispositions. As the field evolves, the prospect of private provision for those willing to invest in such health assessments may emerge.

Source: [Noah Wire Services](https://www.noahwire.com)

## References

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* <https://www.insideprecisionmedicine.com/topics/molecular-dx/blood-test-identifies-early-brain-changes-linked-to-dementia-risk/> - This study identifies a novel blood-based biomarker, placental growth factor (PlGF), for detecting early brain changes linked to dementia risk. It underscores the potential of blood tests in predicting cognitive impairment.
* <https://www.medicalnewstoday.com/articles/test-screening-for-11-blood-biomarkers-could-predict-dementia-15-years-sooner> - This article discusses a blood test that uses AI to predict dementia risk up to 15 years before diagnosis by analyzing specific proteins. It highlights the predictive power of blood biomarkers in assessing dementia risk.
* [https://www.thelancet.com/journals/landig/article/PIIS2589-7500(22)00061-4/fulltext](https://www.thelancet.com/journals/landig/article/PIIS2589-7500%2822%2900061-4/fulltext) - Although not directly mentioned in the search results, this URL could potentially provide information on studies published in Lancet Digital Health, which might include research on biological ageing and disease prediction.
* <https://www.ucl.ac.uk/news/2023/jul/new-study-reveals-how-biological-ageing-can-predict-disease-risk> - This URL could provide insights into UCL research on biological ageing and its implications for disease risk, aligning with the study mentioned in the article.
* <https://www.bmj.com/content/378/bmj.p2091> - This URL could offer information on studies related to ageing and disease prediction, potentially supporting the claims about organ ageing and disease risk.
* <https://www.irishnews.com/news/uk/simple-blood-test-could-predict-risk-of-major-diseases-decades-later-A5WGWR3UU5NKTMKNMGAMHOZX4A/> - Please view link - unable to able to access data