Blood analysis predicts sepsis and organ failure in children

by University of Queensland

Credit: Karolina Grabowska from Pexels

University of Queensland researchers have developed a method to predict if a child is likely to develop sepsis and go into organ failure.

Associate Professor Lachlan Coin from UQ's Institute for Molecular Bioscience in Australia said sepsis was a life-threatening condition where a severe immune response to infection causes organ damage.

"Our research involved more than 900 critically ill children in the emergency departments and intensive care units of four Queensland hospitals," said Dr. Coin, who is also a Professor at the Doherty Institute at the University of Melbourne, Australia. "Blood samples were taken from these patients at the acute stage of their infection, and we analyzed which genes were activated or deactivated.

"We were able to identify patterns of gene expression which could predict whether the child would develop organ failure within the next 24 hours, as well as whether the child had a bacterial or viral infection or a non-infectious inflammatory syndrome."

The study is published in *The Lancet Child & Adolescent Health* journal.

Professor Luregn Schlapbach from UQ's Child Health Research Center said sepsis is best treated when recognized early, so the finding could help clinicians in the future.

"Diagnosing sepsis is often challenging because many pediatric illnesses can present the same," Professor Schlapbach said. "Having precision markers that tell you whether a child is going to develop the condition is urgently needed.

"Currently doctors give antibiotics, fluids and increase observation of any child if sepsis is suspected, but unfortunately that means there are children who receive unnecessary treatment."

Professor Schlapbach said more research was needed before the findings could help clinicians to act pre-emptively. "Our next step will be to transfer what we have discovered to a point-of-

care platform, which means we can potentially generate the results from a blood test within an hour," he said. **-medicalxpress.com/news, March 26, 2024**

More information: Luregn J Schlapbach et al, Host gene expression signatures to identify infection type and organ dysfunction in children evaluated for sepsis: a multicentre cohort study, *The Lancet Child & Adolescent Health* (2024). DOI: 10.1016/S2352-4642(24)00017-8
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