

Antibiotics or not? Improved method of diagnosing infection may soon help doctors decide

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Researchers have found a novel way to diagnose and manage patients with fever. How? Through new biomarkers that can tell the difference

between bacterial and viral infection.

The most common reason that parents seek medical care for their children is fever. But only in a small proportion (5 to 10 percent) of these cases is the fever caused by a life-threatening bacterial infection. Most of the time, febrile illness – illness caused by high fever – is brought on by a viral infection that runs its course without any need for antibiotic treatment. However, since there are no reliable tests, many children are unnecessarily administered antibiotics, which are used for treating bacterial rather than [viral infections](#).

The inadequacy of the current methods used to identify a bacterial infection constitutes a major problem for healthcare providers around the world. At present, clinicians detect the presence of bacteria through blood, urine or spinal fluid cultures. However, many of these tests are neither very sensitive nor very specific. Furthermore, since the results of bacterial cultures take at least 48 hours to become available, the decision whether to administer antibiotics has already been made by that time.

It is with the aim of improving diagnosis and the management of febrile patients that the EU-funded PERFORM project was launched. It's applying novel methods to identify biomarkers in the blood of febrile children. Their purpose is to accurately distinguish bacterial from viral infection.

Identifying infection through genes and proteins

To achieve this goal, the project team is developing an extensive biobank with samples from earlier EU-funded studies added to thousands of new cases from European and West African countries. Rather than being used to identify bacteria that cause fever, the biobank samples are being utilised to identify the pattern of genes and proteins activated by the infection. Using this pattern, the team will identify a 'signature' that

distinguishes bacterial from viral infection. The most accurate of the biomarkers will then be evaluated in febrile patients in different healthcare settings across Europe.

This is the largest ribonucleic acid expression study of its kind to date, whose additional goal is to distinguish infections from inflammatory causes of fever. The project will also conduct an observational study on the management of children suffering from febrile illness. Through the unique insight it will gain on how febrile children are managed across Europe and West Africa, the study will serve as a guide for future researchers on how to improve management.

By improving methods of diagnosing [bacterial infection](#) and managing febrile patients, PERFORM ultimately aims to reduce the unnecessary administration of antibiotics in those children suffering from viral [infection](#). This will contribute to current global endeavours to counter antimicrobial resistance, which has become an increasingly serious threat to global health.

Throughout its 5-year duration, PERFORM (Personalised Risk assessment in [febrile illness](#) to Optimise Real-life Management across the European Union) will create a comprehensive management plan for [children](#) suffering from [fever](#). The plan is set to be implemented in Europe's different healthcare systems and will link sophisticated new genomic and proteomic approaches to clinical phenotyping.

More information: PERFORM project website:
www.perform2020.eu/

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