BACMO: Advanced Method for Differentiating Viral from Bacterial Pneumonia.

Business area

Diagnostics

Market sector

Pneumonia, Precision Medicine, Paediatrics

Medical Indication

Infectious diseases, Pneumonia

Research goal

Develop a transcriptomic signature for distinguishing bacterial from viral pneumonia in pediatric patients, aiming to enhance diagnostic accuracy and guide appropriate treatment.

Problem to solve

Current pneumonia diagnosis relies on clinical presentation and resource-dependent tests, which have limitations in differentiating the etiology of the disease, leading to variability in treatment decisions. Consequently, misdiagnosis of bacterial pneumonia is common, increasing costs to healthcare systems, unnecessary medical tests, hospital admissions, and incorrect antibiotic prescriptions

Innovation

We have identified a robust biomarker signature consisting of 5 transcripts in pediatric patients with pneumonia. BACMO effectively differentiates between bacterial and viral pneumonias, a critical distinction for guiding treatment decisions. BACMO was validated across two independent cohorts, and achieved high performance (AUC 0.95, sensitivity = 0.8, specificity = 1.0), demonstrating its potential as a routine diagnostic tool. Given its high performance, BACMO has the potential to become a routine diagnostic tool in clinical settings. Unlike current diagnostic methods that often rely on resource-intensive techniques, BACMO offers a more streamlined and accessible solution.

- Speed and Efficiency: It allows for the rapid distinction between bacterial and viral infections, helping clinicians initiate appropriate treatments faster.
- Cost-Effectiveness: As diagnostic method that does not rely on pathogen-specific tests, it can be applied across a wide range of healthcare settings, including those with limited resources.

By implementing BACMO, healthcare providers can reduce the overuse of antibiotics, thus playing a role in combating antibiotic resistance while ensuring that bacterial pneumonia patients receive timely and targeted treatments.

Market opportunity

Our transcriptomic signature targets a significant unmet need in the global pneumonia diagnostics market, which was valued at approximately $500 million in 2020 and is projected to grow at a CAGR of 7.2% from 2021 to 2028. The main drivers of this growth are the increasing incidence of pneumonia, which remains a leading cause of death in children under five, with over 700,000 deaths annually worldwide, as well as the rising demand for advanced diagnostic tools in healthcare. The global demand for more personalized and precise treatments is increasing. Our solution aligns with this trend by offering actionable insights into the specific nature of the infection, potentially becoming a key tool in the global precision medicine market, which is forecasted to reach $216 billion by 2028. With these factors in mind, our transcriptomic signature has the potential to not only capture a significant share of the pneumonia diagnostics market but also play a pivotal role in combating antibiotic misuse and optimizing treatment outcomes, providing a scalable solution for healthcare systems globally.

Research team

GENPOB (Genetics of POpulations in Biomedicine) and GENVIP (Research Group on Genetics, Vaccines and Infectious Diseases) groups

- **Antonio Salas Ellacuriaga**
- **Sandra Viz Lasheras**
- **Federico Martinón Torres**
- **Alberto Gómez Carballa**

Intellectual property

European patent **EP24382240** "In vitro method for the differential diagnosis between viral and bacterial pneumonia in a patient"

Development stage:

R+D — Analytical validation — Prototype validation — Clinical validation — Regulation process — Clinical utility

Available for: *Licensing, co-development*