

Pulmonology

Serum Biomarkers and Algorithm of Lung Decline in Cystic Fibrosis

Brief Description of Technology

Novel serum protein biomarkers and functional data analysis-based algorithm used to develop a predictive test for lung function decline.

TECHNOLOGY ID

2017-0211

BUSINESS OPPORTUNITY

Exclusive License or Sponsored
Research

TECHNOLOGY TYPE

Diagnostic

PATENT INFORMATION

US Non-Provisional Filing

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Technology Overview

Lung disease progression is a leading problem in CF care. When a patient has a pulmonary exacerbation episode (PEX), hospitalization and aggressive treatment with intravenous antibiotics may be required; however, it is impractical and expensive to hospitalize and treat patients proactively without evidence of disease progression. Clinicians depend on outcomes measures, most of which are lagging indicators, to guide treatment decisions. Predictive and personalized measures of lung function decline that are superior to current measures are needed to inform treatment decisions in chronic diseases such as CF, severe asthma, and COPD. We have developed a novel, functional data analysis-based algorithm that uses physiological and phenotypic variables in combination with newly identified prognostic biomarkers. Early feasibility results show that the biomarker driven algorithm can predict lung function decline 6 months in advance of the PEX with good sensitivity and specificity. This can potentially 1) allow for effective classification of patients at high risk for PEX and who can benefit from aggressive therapy and 2) accelerate CF clinical trials with rapid outcome measures for effectiveness of drug therapy in stemming disease progression.

Applications

CF, COPD, Severe Asthma

Advantages

- Routine testing would allow for proactive interventions and minimize hospitalizations.
- Potential for high value reimbursements, as insurers may wish to prevent acute attacks that would result in hospital admissions.

Market Overview

In the U.S. and major European markets, there are more than 70K people living with CF, and about 2K new cases of this chronic disease are diagnosed each year.

Investigator Overview

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