

ResApp Achieves Breakthrough Performance in Paediatric Clinical Study

- **Correctly detected lower respiratory tract disease in 80% of patients who were initially diagnosed as clear by experienced clinicians using stethoscopes – but were finally diagnosed as having a lower respiratory tract disease after additional clinical testing**
- **99% accuracy for distinguishing patients with lower respiratory tract disease from subjects with no discernible respiratory disease**
- **91% accuracy for differential diagnosis of patients with lower respiratory tract disease versus patients with upper respiratory tract infections with no lower respiratory tract involvement and subjects with no discernible respiratory tract disease**

Perth, Western Australia, 2 March 2016 -- ResApp Health Limited (ASX: RAP), the developer of smartphone medical applications for the diagnosis and management of respiratory disease, is pleased to provide an update on its paediatric clinical study being undertaken at Joondalup Health Campus (JHC) and Princess Margaret Hospital (PMH) in Perth, Western Australia. Enrolment continues at a fast pace, with 598 subjects (481 confirmed respiratory disease cases and 117 control cases) now enrolled in the study.

Preliminary analysis by the research team, led by Associate Professor Udantha Abeyratne has highlighted the high level of accuracy of ResApp's diagnostic algorithms for the identification of lower respiratory tract disease. Lower respiratory diseases (such as bronchiolitis and pneumonia) are often more severe than upper respiratory tract infections (URTIs), and the ability to differentiate between these two categories is critical for effective treatment and advice.

Traditional diagnostic techniques rely on chest auscultation (listening with a stethoscope), often followed by additional observations (such as oxygen saturation) and tests (chest x-ray, blood tests, sputum tests). ResApp's dataset of 218 lower respiratory tract disease cases includes 24 cases where auscultation by experienced paediatric clinical teams was clear. Only after further observations and tests were these 24 cases correctly diagnosed with lower respiratory tract disease. In 19 of these cases (80%) ResApp's algorithms were able to correctly identify lower respiratory tract involvement without the use of additional clinical observations or additional tests.

ResApp's diagnostic tool also achieved overall accuracy levels in excess of 90% when used to differentiate between lower respiratory tract diseases and URTIs with no lower respiratory tract involvement, and achieved 99% accuracy when distinguishing between patients with a lower respiratory tract disease and subjects with no discernible respiratory tract disease.

"These results clearly demonstrate that ResApp's diagnostic tool outperforms experienced clinicians using stethoscopes and can match the results provided by an entire suite of expensive, time-consuming clinical tests," said Dr Tony Keating, CEO and Managing Director of ResApp. "We are confident that ResApp's accuracy will improve even further as we enrol more patients."

As with previous analyses, the performance of the algorithm was evaluated using the method of leave-one-out cross-validation against the JHC or PMH medical team's final clinical diagnosis based on clinical presentations, auscultation findings and imaging as well as laboratory test results.

Table of respiratory disease groups used in this analysis

Normal Group (88 subjects, increased from 51 in November analysis)	Subjects with no discernible respiratory illness at the time of measurement.
Lower Respiratory Disease Group (218 subjects)	Patients with a diagnostic classification of asthma/viral wheeze, viral pneumonia or bronchiolitis alone or with comorbidities* of URTI.
URTI Group (36 subjects increased from 20 subjects in November analysis)	Patients with URTI alone without medically discernible lower respiratory tract involvement at the time of measurement.

**Comorbidity is the simultaneous appearance of two or more physical illnesses.*

Table of preliminary results, Lower Respiratory Disease Group versus Normal Group

Features Used in Algorithm	Sensitivity	Specificity	Accuracy
Cough sound alone	91%	91%	91%
Cough sound plus patient age	93%	93%	93%
Cough sound plus patient age plus presence of fever and runny nose	99%	100%	99%

Table of preliminary results, Lower Respiratory Disease Group versus combined Normal and URTI Group†

Features Used in Algorithm	Sensitivity	Specificity	Accuracy
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Cough sound alone	85%	86%	86%
Cough sound plus patient age	90%	83%	87%
Cough sound plus patient age, presence of fever and runny nose	92%	89%	91%

†The clinical team believe that some patients in the URTI Group may have mild lower respiratory tract involvement not detected in routine clinical examination which may be being detected by the algorithm and reducing accuracy when compared to the clinical diagnosis.

The Company notes that these results are preliminary and may change as the study progresses and more patients are added to the dataset. Associate Professor Abeyratne's team is continuing to analyse the dataset and the company expects to provide results on the larger dataset in Q1 2016.

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About ResApp Health Limited

ResApp Health Limited, founded in 2014, is developing smartphone medical applications for the diagnosis and management of respiratory disease. The technology is based on machine learning algorithms that use sound alone to diagnose and measure the severity of respiratory conditions without the need for additional hardware. The algorithms were initially developed by The University of Queensland with funding from the Bill and Melinda Gates Foundation. ResApp has a multi-site clinical study underway and preliminary results demonstrated accurate diagnosis of pneumonia, asthma/viral wheeze, bronchiolitis, croup and upper respiratory tract infections in children. Approval has been recently received to extend the study to adults at two major Australian hospitals. Markets for ResApp's technology include telehealth use through partnerships with telehealth service providers, emergency department and regular clinic use by healthcare providers, at-home use by consumers and working with global aid and humanitarian organisations to deliver tools for the developing world.

For more information on ResApp, visit www.resapphealth.com.au