ResApp Provides Updated Paediatric Clinical Study Results

- **New accuracy benchmarks achieved using an expanded 524 subject dataset (186 additional subjects since previously released results)**
- **Correctly detected lower respiratory tract disease in 97% of patients who were initial diagnosed as clear by experienced clinicians using stethoscopes (an increase from the 80% reported previously)**
- **High levels of accuracy again demonstrated for differential diagnosis of patients with lower respiratory tract disease from patients with upper respiratory tract disease and also for differentiating patients with a particular respiratory disease from patients with other respiratory diseases**
- **Preliminary results for separation of bacterial and atypical pneumonia from viral pneumonia with accuracy of 89% and 92% respectively**

Perth, Western Australia, 31 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. These updated results were calculated from a 524 subject dataset, a significant increase over the 338 subject dataset used for the results that were released in November 2015.

Analysis of this larger dataset by Associate Professor Udantha Abeyratne's team has reaffirmed the high level of accuracy of ResApp's diagnostic algorithms for the identification of lower respiratory tract disease. The algorithms were able to correctly detect lower respiratory tract disease in 97% 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[1]. ResApp's algorithms achieved overall accuracy levels in excess of 89% when used to differentiate between patients with lower respiratory tract disease and patients with upper respiratory tract infections with no lower respiratory tract involvement and subjects with no discernible respiratory tract disease.

[1] This increase in performance (from 80% previously reported) is due to the combination of the increased number of subjects considered (37 subjects compared to 24 in the March 2 analysis) and the inclusion of the presence of fever and the presence of runny nose in the algorithm.

For the differential diagnosis of croup, viral pneumonia, bronchiolitis and upper respiratory tract infections (URTIs) ResApp's algorithms achieved accuracy levels between 90% and 98% on the larger dataset. The overall sensitivity, specificity and accuracy levels obtained on the larger dataset were generally similar to the previously reported results.

The research team also performed a preliminary evaluation of the algorithms' ability to separate bacterial and atypical pneumonia from viral pneumonia. These preliminary results demonstrated that ResApp's algorithms could achieve accuracy of between 89% and 92% for the separation of these different types of pneumonia. Note that these results should be taken as preliminary as the patient numbers are relatively low and may change as additional patients with bacterial and atypical pneumonia are added to the dataset.

"We are pleased to again report high levels of accuracy on a dataset that is more than 50% larger than the previously used dataset," said Dr Tony Keating, CEO and Managing Director of ResApp. "These updated results reaffirm the algorithm's clinical accuracy right before we enter the pivotal studies needed for our upcoming premarket submission to the US Food and Drug Administration. In addition, these preliminary results for the separation of bacterial and atypical pneumonia from viral pneumonia are very exciting as they demonstrate the power of ResApp's algorithm in supporting clinicians in making critical decisions for patient treatment."

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.

ResApp intends to continue enrolment in the current paediatric study due to the high value of the data collected.

Table of respiratory disease groups used in this analysis

Normal Group (103 subjects, increased from 88 subjects in March 2 analysis)	Subjects with no discernible respiratory illness at the time of measurement.
Lower Respiratory Disease Group (236 subjects, increased from 218 subjects in March 2 analysis)	Patients with a diagnostic classification of asthma/viral wheeze, viral pneumonia or bronchiolitis alone or with comorbidities* of URTI.
URTI Group (40 subjects, increased from 36	Patients with URTI alone without medically discernible lower respiratory tract involvement at

subjects in March 2 analysis)	the time of measurement.
Viral Pneumonia Group (43 subjects, increased from 35 subjects in November analysis)	Patients with a diagnostic classification of viral pneumonia alone or with comorbidities of URTI and/or viral-induced wheeze. Only X-ray confirmed viral pneumonias are considered.
Bronchiolitis Group (42 subjects, increased from 32 subjects in November analysis)	Patients with a diagnostic classification of bronchiolitis with or without URTI as a comorbidity. Bronchiolitis is clinically taken as pneumonia/severe viral infections in children below 12 months.
Croup Group (38, subjects, increased from 17 subjects in November analysis)	Patients with a diagnostic classification of croup, with or without URTI as a comorbidity.
Bacterial Pneumonia Group (14 subjects)	Patients with a diagnostic classification of bacterial pneumonia alone or with comorbidities of URTI and/or viral-induced wheeze. Only X-ray confirmed pneumonias are considered.
Atypical Pneumonia Group (17 subjects)	Patients with a diagnostic classification of atypical pneumonia alone or with comorbidities of URTI and/or viral-induced wheeze. Only X-ray confirmed pneumonias are considered.

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

Table of results for differential diagnosis of respiratory disease

Target Group(s)	Control Group	Sensitivity	Specificity	Accuracy
Lower Respiratory Disease	Normal			
(cough alone)		92%	90%	91%
(with presence of runny nose and fever)		98%	97%	98%
Lower Respiratory Disease	URTI + Normal			
(cough alone)		88%	83%	86%
(with age and presence of runny nose)		91%	85%	89%
Viral Pneumonia + Bronchiolitis + URTI + Croup	Normal			
(cough alone)		91%	87%	89%
(with age, presence of runny nose and fever)		99%	97%	98%

Viral Pneumonia + Bronchiolitis + URTI *(cough alone)*	Croup	94%	89%	93%
Viral Pneumonia + Bronchiolitis	URTI			
(cough alone)		89%	85%	88%
(with patient age)		92%	89%	90%
Viral Pneumonia	Bronchiolitis			
(cough alone)		91%	90%	91%
(with patient age, presence of runny nose and fever)		98%	98%	98%
Viral Pneumonia	Bacterial Pneumonia			
(cough alone)		93%**	79%**	89%**
(with presence of runny nose)		86%**	86%**	86%**
Viral Pneumonia	Atypical Pneumonia			
(cough alone)		86%**	82%**	85%**
(with patient age)		95%**	82%**	92%**

***The results for diagnosis of bacterial and atypical pneumonia should be considered as preliminary due to the low number of patients (14 and 17 respectively) considered.*

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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

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