ResApp Announces Positive Results from Prospective Sleep Apnoea Clinical Study

Brisbane, Australia, 11 October 2018 -- ResApp Health Limited (ASX:RAP), a leading digital health company developing smartphone applications for the diagnosis and management of respiratory disease, is pleased to announce positive results from its prospective, double-blind obstructive sleep apnoea (OSA) clinical study. Analysis confirmed that ResApp's machine-learning algorithms were able to accurately identify OSA from a patient's overnight breathing and snoring sounds recorded using only a smartphone placed on a bedside table. The company is working with Dr Philip Currie and Dr Ivan Ling of Cardio Respiratory Sleep (CRS) who recruited patients at Hollywood Private Hospital and The Park Private Hospital in Perth, Australia.

Data from 582 adult patients was analysed, of which 62% were male. The mean age of patients was 53 years (range 18-94) with a mean apnoea hypopnea index (AHI) of 26/h (range 0-143).

ResApp's algorithms achieved 84% sensitivity and 83% specificity for identifying patients with an AHI greater than or equal to 5/h (patients with mild, moderate or severe OSA) compared to simultaneous gold standard in-laboratory polysomnography scored using the current 2012 AASM scoring criteria. The area under the receiver operating characteristic curve (AUC, a standard measure of how well a test distinguishes between two diagnostic groups, where a value of 1 represents a perfect test) was 0.90.

The algorithms were similarly able to identify patients with AHI greater than or equal to 15/h (moderate or severe OSA) and AHI greater than or equal to 30/h (severe OSA).

A summary of the performance for different AHI thresholds is presented in the table below.

	Patients[1]		AUC	Sensitivity	Specificity
	Y	**N**			
AHI ≥ 5/h	507	47	0.90 (95% CI, 0.87-0.93)	84% (95% CI, 80-87%)	83% (95% CI, 69-92%)
AHI ≥ 15/h	346	205	0.88 (95% CI, 0.85-0.91)	80% (95% CI, 75-84%)	80% (95% CI, 73-85%)
AHI ≥ 30/h	191	372	0.90 (95% CI, 0.87-0.93)	82% (95% CI, 76-87%)	82% (95% CI, 77-86%)

1. Number of patients clinically scored above or below the AHI threshold where the algorithms provided a result. For each test, the algorithms were not able to provide a result for a small number of patients [AHI ≥ 5/h, 28 (5%) patients; AHI ≥ 15/h, 31 (5%) patients; AHI ≥ 30/h, 19 (3%) patients].

Dr Philip Currie and Dr Ivan Ling, study Principal Investigators commented, "The results from the study are excellent and we are one step closer to expanding the set of tools that can help identify people with sleep apnoea. Today's methods of sleep apnoea diagnosis, either sleep laboratory polysomnography or home sleep testing, are not able to mass screen patients due to availability and costs, leaving a large unmet clinical and societal need to find a solution to population screen for OSA, especially in patients with existing heart disease, obesity, hypertension, atrial fibrillation or type 2 diabetes."

Associate Professor Udantha Abeyratne, Chief Scientist of ResApp added "Sleep sound analysis has come of age and these results provide solid confirmation that snoring carries vital information on OSA. This work should provide an excellent platform to build an accurate, low-cost technology that can be used in OSA screening and long-term monitoring applications in a home setting."

"By using an off-the-shelf smartphone, we have the opportunity to deliver a highly-scalable, accurate and easy-to-use screening test for OSA. This has the potential to improve the health of a large portion of the population and significantly reduce the economic burden that undiagnosed OSA causes." said Tony Keating, CEO and Managing Director of ResApp. "These clinical study results confirm that our sleep apnoea solution works very well and we now look forward to comparing the performance of our algorithms with home sleep testing, which is the final step before we make a regulatory submission."

The company is currently recruiting patients undergoing home sleep testing and is targeting a regulatory submission for its sleep apnoea screening product by the end of this calendar year.

About Sleep Apnoea
Sleep apnoea is a common sleep disorder where the person repeatedly stops breathing or has periods of shallow breathing during sleep. Recent data from the Wisconsin Sleep Cohort Study showed that sleep apnoea affects more than three in ten men and nearly two in ten women. 80 percent of people suffering moderate and severe sleep apnoea are undiagnosed. Untreated OSA is known to increase the risk of heart disease, hypertension, stroke and type 2 diabetes, and is estimated by the American Academy of Sleep Medicine to cost the US economy $149.6 billion annually.

About ResApp Health Limited
ResApp Health Limited (ASX: RAP) is a leading digital health company developing smartphone applications for the diagnosis and management of respiratory disease. ResApp's machine learning algorithms use sound to diagnose and measure the severity of respiratory conditions without the need for additional hardware. Clinical studies are underway at leading hospitals in the United States and Australia, and previous studies have demonstrated accurate diagnosis of pneumonia, asthma/reactive airway disease, bronchiolitis, croup, chronic obstructive pulmonary disease and upper respiratory tract infections. ResApp has also obtained excellent results for screening of obstructive sleep apnoea in a proof-of-concept clinical study. Potential customers

of ResApp's products include healthcare providers in telehealth, emergency department, urgent care and primary care settings as well as humanitarian organisations in the developing world.

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

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