RESAPP HEALTH LTD

Research Note

INITIATING COVERAGE

FDA approval is key to success, but commercial model has potential for rapid take-up

- **We initiate research coverage of ResApp Health Ltd (RAP) with a Speculative BUY and a DCF valuation of $0.59 / share. RAP is on the cusp of changing the way a range of respiratory conditions are diagnosed with its innovative smartphone algorithm diagnostic with machine learning characteristics. Australian trial data, which covers over 1,800 patients to date, has been positive in revealing a high level of accuracy that is as good as, or better than, existing and more expensive modes of diagnosis. This technology has the key advantage of not requiring any extra hardware which can then drive wide distribution in both developed and developing markets. The technology simply uses the particular cough signature attached to each condition to perform differential diagnosis between respiratory conditions. Given that c30% to c50% of doctor visits relate to respiratory illness, this technology could disrupt a very large market and drive significant efficiency in healthcare system costs and facilitate early detection and treatment in children, particularly in the area of pneumonia that kills over 900k children under five, globally. We expect FDA trials to conclude in 2HFY17 which would enable sales to commence early in 1HFY18. Forecasts at this stage have a high degree of uncertainty, but if RAP can execute its business model well, significant upside is available.**

- RAP's technology has been developed over ten years and patents are currently pending that would cover RAP out to 2033. The patent covers the signatures that are used to extract the information from the cough sound, and are claimed to be unique for extracting information about the Lower Respiratory Tract. Copying the algorithm is not easy, as it would require significant amounts of high quality data to train an algorithm sufficiently.

- The US market is RAP's initial focus and the addressable market is cUS$12bn. The key target will be the US Telemedicine market, where Telehealth consultations numbered 75m in 2014 and are expected to grow at c50% pa over several years, reflecting the significant upswing in US Telehealth, driven by the need from regulators and operators to increase access to fast diagnosis at a lower cost. The cost saving opportunity to the US health system is multiples of the revenue opportunity to Telehealth generally, and therefore the potential for RAP could be revolutionary if it overcomes its most critical hurdle in the forthcoming US FDA trial.

16 November 2016		
12mth Rating		**SPEC. BUY**
Price	A$	0.40
Target Price	A$	0.59
12mth Total Return	%	47.5
RIC: **RAP.AX**		BBG: **RAP.AU**
Shares o/s	m	594.2
Free Float	%	81.1
Market Cap.	A$m	237.6
Net Debt (Cash)	A$m	-13.7
Net Debt/Equity	%	-85.6
3mth Av. D. T'over	A$m	0
52wk High/Low	A$	0.55 / 0.07
2yr adj. beta		0
Valuation:		
Methodology		DCF
Value per share	A$	0.59

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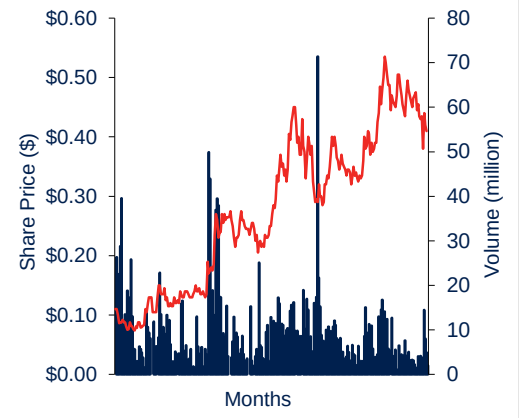
Year End June 30	2015A	2016A	2017F	2018F	2019F
Reported NPAT ($m)	(0.6)	(3.2)	(6.0)	13.4	35.9
Recurrent NPAT ($m)	(0.5)	(3.2)	(6.0)	13.4	35.9
Recurrent EPS (cents)	(0.1)	(0.5)	(1.0)	2.3	6.0
EPS Growth (%)	na	na	na	na	167.5
PER (x)	(393.5)	(85.4)	(45.4)	20.4	7.6
PEG	na	na	na	na	0.0
EBITDA ($m)	(0.7)	(3.3)	(5.8)	18.8	50.7
EV/EBITDA (x)	(290.0)	(83.2)	(46.8)	14.6	5.4
Free Cashflow	(1.0)	(3.1)	(4.8)	4.6	24.8
FCFPS (cents)	(0.2)	(0.5)	(0.8)	0.8	4.2
PFCF (x)	(198.2)	(89.4)	(57.1)	59.5	11.1
DPS (cents)	0.0	0.0	0.0	0.0	0.0
Yield (%)	0.0	0.0	0.0	0.0	0.0
Franking (%)	0.0	0.0	0.0	0.0	0.0

12 Month Share Price Performance



Performance %	1mth	3mth	12mth
Absolute	-14.9	15.9	196.3
Rel. S&P/ASX 300	-12.7	20.0	190.8

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BACKGROUND TO THE EMERGING RESAPP STORY

Lots of smarts in them smartphones!

ResApp Health Ltd (RAP) has developed a medical diagnostic device originally invented by Associate Professor Udantha Abeyratne at the University of Queensland (UQ). The device is able to determine whether a patient has a respiratory disease and the kind of disease solely through a patient coughing into a smart phone. The diagnostic Application (App) works on existing smart phones and most importantly does not require the use of any external hardware. Subject to regulatory approval via FDA trials in the US, deployment of the App should have minimal friction within the burgeoning digital health sector.

RAP's technology was originally focused on a diagnostic system for sleep apnoea to develop a low cost home-based diagnostic system to replace high cost sleep laboratories. However, the direction of the Abeyratne team at UQ's School of Information Technology and Electrical Engineering changed when the team won $100,000 in grant funding from the Bill and Melinda Gates Foundation to develop a pneumonia diagnostic device. The reasoning was that pneumonia had identifiable soundwave signatures and that a smartphone-based diagnostic could detect pneumonia faster than via listening to one's chest through a stethoscope known as auscultation. The Gates Foundation had an interest in this area as pneumonia kills over 900k children under the age of five, globally. As only c3% of applications was successful, the grant was a significant milestone for the development of the invention and reflected credibility for the concept amongst the peer group.

Development of the technology has been built on two basic principles:

- Individual respiratory diseases have certain "signatures" that are generally uniform across the population. The signatures are represented by soundwaves using advanced algorithms

- Microphones in standard smartphones could capture these signatures in cough breathing sounds

The genius in the algorithm is that it can learn and improve the accuracy of results over time with increasing exposure to diagnosing respiratory conditions through sound recordings and ancillary information including fever etc. being fed into the system. This is known as "machine learning" and falls into the Artificial Intelligence (AI) thematic. Through the process of machine learning, the technology is now able to detect a variety of respiratory diseases with accuracy above 90%. RAP has recently referred to the technology having the prospect of moving beyond diagnoses to actual management of respiratory conditions through follow up measurement.

RAP holds an exclusive worldwide license to UQ's Intellectual Property on the ResApp system, with patents pending with coverage out to 2033. Currently the algorithms behind the technology are a trade secret.

The technology has been developed over c10 years and focuses on extracting a cough from an audio stream and then processing that sound to provide a diagnosis. RAP believes that a cough provides the best signal-to-noise ratio for doing the diagnosis. The patent also covers the 'features' or signatures that are used to extract the information from the cough sound. The signatures were developed over a number of years and are claimed to be unique for extracting information about the Lower Respiratory Tract. The machine learning component would also require a significant amount of high quality data to be collected so that algorithms could be trained sufficiently.

The focus for RAP will be the US market, followed by the EU. An Australian launch could be c12 months after launch in the US. The US is the main focus as the inefficiency of the US healthcare system provides the greatest opportunity and RAP's diagnostic tool fits within the burgeoning digital healthcare sector in the US. If successful in both clinical trial and commercialisation phases, RAP would not only have created value for shareholders in the billions, but also have succeeded in revolutionising the manner and cost to diagnose and treat respiratory diseases, not just in the developed world, but also in the developing world, where arguably the need is even greater.

WHAT HAS RAP DEMONSTRATED TO DATE

2013 - Indonesia

The Gates Foundation $100k was used to initiate a proof-of-concept study of the RAP technology, data for which was published in 2013. The initial study took place at Sardjito Hospital, associated with Gadjah Mada University in Yogyakarta, Indonesia. The study evaluated 91 paediatric patients, showed that RAP's technology was able to detect pneumonia at a sensitivity of c94% and a specificity of c100% once easily obtainable supporting data such as age, fever, runny nose etc. were added to the soundwave analysis. When RAP's technology was tested for its ability to diagnose asthma, the result was c100% sensitivity and c80% specificity.

Sensitivity and Specificity are technical terms that amalgamate to an overall measure of accuracy but for clarification, these terms can be defined as :

Sensitivity – the % of patients who have the disease as confirmed by clinical diagnosis, where RAP's technology gave a positive test result

Specificity – the % of patients who do not have the disease where RAP's test also showed the patient did not have the disease.

It should be noted that, in the comparison between a clinical diagnosis and the testing of RAP's technology, no information is shared and the results are derived from post testing analysis to derive integrity in the result claims.

In the peer review of these results, a 2013 paper, Annals of Biomedical Engineering showed that RAP's technology could distinguish between 'wet' and 'dry' cough in c87% of cases for a 'training / validation dataset' and c76% to c85% prospectively. In another paper in December 2014, Transactions on Biomedical Engineering, it was determined that RAP's technology showed a c94% sensitivity and c88% specificity for pneumonia diagnosis could be achieved with various aspects of the RAP technology.

2015 - Perth

In March 2015, RAP initiated a study in paediatric patients at the Joondalup Health Campus (JHC). In this study, the predictive ability of RAP's technology was evaluated using the 'leave-one-out cross-validation' approach where the performance of the algorithms was evaluated against conventional clinical diagnosis by hospital staff.

The study initially intended to recruit 150 patients with various respiratory conditions, with patients recruited by July 2015. However, a second site at Princess Margaret Hospital (PMH) was brought in and resulted in raising the recruitment target to 400. The larger study was designed to further optimise RAP's diagnostic ability in pneumonia and asthma, as well as other indications such as bronchitis and upper respiratory tract infections (URTI). The Perth study was significant for RAP as it included new conditions, control procedures, and 'voluntary' coughing as compared with spontaneous coughing previously.

Progressive data from the trial was released and it showed:

- September 2015 - >96% accuracy in diagnosing asthma and >96% accuracy in diagnosing viral pneumonia over the control group. This result was driven by analysing patient coughs and was further evidence that RAP's machine learning technology was working

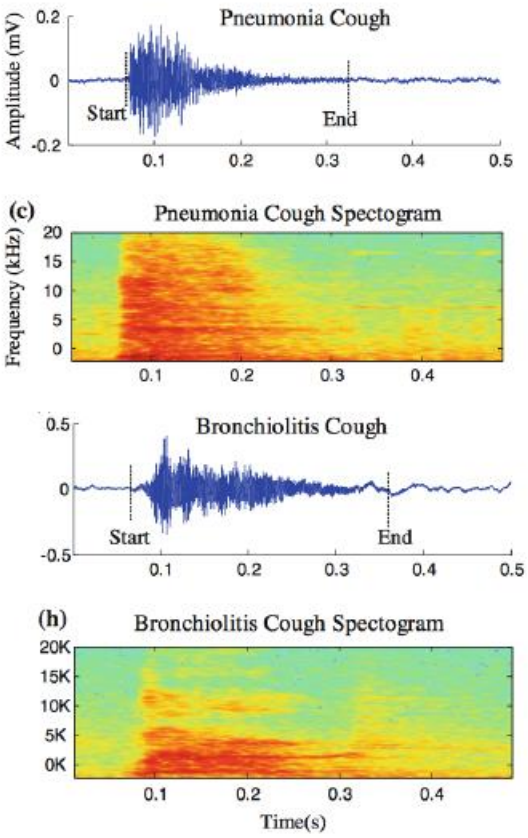
- November 2015 – RAP showed with an increased number of subjects (from 39 to 51) that it could detect bronchiolitis with c100% accuracy, croup with c99% accuracy and URTI with c96% accuracy. Furthermore RAP was able to distinguish one respiratory condition from another. When URTI was set as the reference point, the identification of other conditions was >87% and when the reference point was varied, the lowest accuracy reading for identifying a particular condition was still >85%.

- Early March 2016 – RAP showed c99% accuracy in detecting lower respiratory tract infection (LRTI) against the control group, and c91% accuracy in detecting LRTI against either URTI or no discernible tract disease.

- Late March 2016 – RAP was able to separate bacterial and atypical pneumonia from viral pneumonia with respective accuracies of c89% and c92%

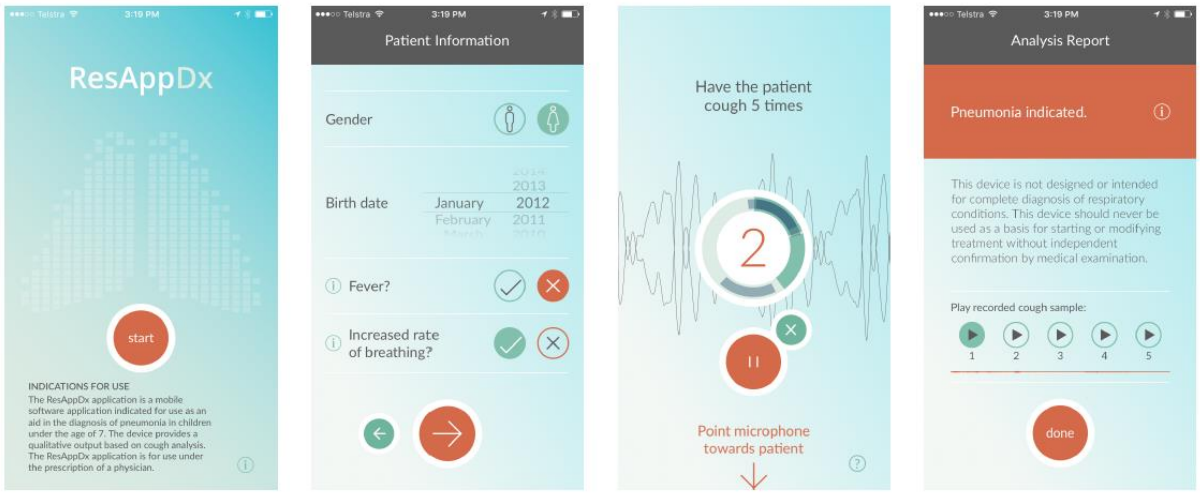
As of October 2016, 973 patients had been enrolled to date.

Figure 1: Cough Signatures



Source: ResApp Health Ltd

Figure 2: Smartphone Diagnosis



Source: ResApp Health Ltd

Figure 3: Trial Data Builds Confidence in Diagnostic Technology

2013 Study	Sensitivity	Specificity	Accuracy
Pneumonia *vs. all respiratory*[1]	94%	100%	**96%**
Asthma *vs. pneumonia*[2]	100%	80%	**90%**
2015 Study Preliminary Results	**Sensitivity**	**Specificity**	**Accuracy**
Pneumonia *vs. no respiratory*[4]	100%	95%	**97%**
Asthma *vs. no respiratory*[3]	97%	92%	**95%**
Bronchiolitis *vs. no respiratory*[4]	100%	100%	**100%**
Croup *vs. no respiratory*[4]	94%	100%	**99%**
URTI *vs. no respiratory*[4]	100%	95%	**96%**
Pneumonia, croup or bronchiolitis *vs. URTI*[4]	89-100%	90-95%	**89-98%**
Differential diagnosis of pneumonia, croup, URTI and bronchiolitis[5]	91-99%	89-98%	**89-98%**

Source: ResApp Health Ltd

2016 – Adult Study

The Australian adult study aimed to repeat the performance of the earlier paediatric study. As of October 2016, 772 adult patients have been enrolled in the study.

Initial results in June 2016 showed –

- That RAP could distinguish between Chronic Obstructive Pulmonary Disease (COPD), asthma and pneumonia against a control group with c92% accuracy
- For patients with both asthma and COPD the accuracy rate against the control group was c94%
- RAP could distinguish between COPD and asthma, pneumonia against asthma with c95% to c96% accuracy

The updated set of interim results released in October 2016 continued to show the high levels of sensitivity, specificity and accuracy on the expanded dataset. RAP's sound based algorithms achieved a c91% to c100% accuracy for distinguishing adult patients with COPD, asthma or pneumonia from subjects with no discernible respiratory disease. The updated results also showed accuracy of c100% for distinguishing patients with URTI from the no respiratory disease group, which had not been previously reported.

The differential diagnosis of asthma v COPD, pneumonia v asthma and pneumonia v COPD was achieved at accuracy in the range of c88% and c94%, which had not been previously reported.

The adult study also reaffirmed the paediatric study in correctly detecting LRTI in c84% of adult patients who were initially diagnosed as clear by experienced clinicians using stethoscopes but were finally diagnosed as having a LRTI after additional clinical testing.

It should be noted that the standard for assessing asthma is a lung function test via a spirometer that measures airflow. For RAP's smartphone technology to be validated by a US FDA trial would mark a departure in methodology from the accepted standard.

Figure 4: Respiratory Disease Groups in Analysis

Normal Group: Smokers (27 subjects, increased from 26)	Subjects with no discernible respiratory disease at the time of measurement with a history of smoking.
Normal Group: Non-smokers (57 subjects, increased from 52)	Subjects with no discernible respiratory disease at the time of measurement with no history of smoking.
COPD Group (25 subjects, increased from 22)	Patients with a diagnostic classification of one or more of the following: COPD, COPD with non-infective exacerbation, emphysema. The diagnostic standard is the overall clinical assessment supported by either lung function tests, CT scans or both.
Asthma Group (43 subjects, increased from 25)	Patients with a diagnostic classification of either acute or chronic asthma. Some subjects have concomitant upper respiratory tract infection (URTI) and allergic nasal obstructions. Chronic asthma was diagnosed using lung function tests and acute asthma on history and examination.
Pneumonia Group (71subjects, increased from 17)	Patients with a diagnostic classification of pneumonia with or without URTI. Only X-ray or CT confirmed pneumonias are considered.
URTI Group (20 subjects)	Patients with a diagnostic classification of upper respiratory tract infection (URTI) and no clinically discernible lower respiratory tract involvement.

*In addition to these groups, the available dataset includes patients diagnosed with other respiratory diseases and comorbidities that were not considered in this preliminary analysis.

Source: ResApp Health Ltd

Figure 5: Adult Study Preliminary Results

Target Group(s)	Control Group	Sensitivity	Specificity	Accuracy
COPD	Normal: Non-smokers			
(cough alone)		92%	91%	91%
(with age)		100%	96%	98%
COPD	Normal: Smokers			
(cough alone)		88%	96%	92%
(with age)		100%	100%	100%
Asthma	Normal: Non-smokers			
(cough alone)		91%	88%	89%
(with age)		91%	91%	91%
Asthma	Normal: Smokers			
(cough alone)		91%	93%	92%
(with age and presence of runny nose)		91%	93%	92%
Pneumonia	Normal: Non-smokers			
(cough alone)		87%	93%	90%
(with age, presence of runny nose and fever)		97%	100%	98%
Pneumonia	Normal: Smokers			
(cough alone)		94%	96%	95%
(with age, presence of runny nose and fever)		100%	100%	100%
Asthma and COPD	Normal: Non-smokers			
(cough alone)		93%	88%	90%
(with age, presence of runny nose and fever)		91%	91%	91%
Asthma and COPD	Normal: Smokers			
(cough alone)		96%	96%	96%
(with age and presence of runny nose)		93%	93%	93%
URTI	Normal: Non-smokers and Smokers			
(cough alone)		100%	94%	95%
(with age, presence of runny nose and fever)		100%	100%	100%
Asthma	COPD			
(cough alone)		84%	88%	85%
(with history of smoking)		93%	96%	94%
Pneumonia	Asthma			
(cough alone)		77%	70%	75%
(with presence of fever)		92%	81%	88%
Pneumonia	COPD			
(cough alone)		77%	76%	77%
(with presence of fever)		92%	92%	92%

Source: ResApp Health Ltd

Key Takeaway

These studies provide a strong foundation for a US pivotal study which is expected to be completed in 2HFY17. These studies show that RAP's algorithm has the capability to detect and differentiate between a range of respiratory conditions, based on cough signatures alone, with accuracy levels greater than 90%. It also shows that the machine learning capability that the Abeyratne group built into their system, works!

The other key takeaway is that, in March 2016, RAP reported that its algorithm managed to detect LRTI where the doctors had initially missed it, in c97% of the cases in the paediatric study. If this outcome can be repeated in the US study, it will be enormously beneficial to medical practise and RAP and will be accompanied with the headline – **ResApp outperforms Doctors!**

We do note that this work has yet to be peer reviewed which will provide ultimate validation.

NEXT STEP – US FDA TRIAL

RAP's next step now is to seek marketing authorisation from the US FDA using the De Novo pathway. RAP's algorithm is considered a class II medical device by the FDA which attaches a higher safety profile as it provides a diagnosis without affecting the patient.

In March 2016, RAP had a pre-submission meeting with the FDA following which it announced it would be adopting the De Novo pathway. Typically, device developers pursued either a 510(k) avenue where there was a predicate device on the market, or the PMA avenue for new devices. The De Novo pathway has been available for use for c20 years but was not commonly used until 2012 when a change to the regulations made it ideal for low risk devices with no predicate. This pathway does however have a slightly longer review period of 120 days rather than 90 days under the 510(k) avenue.

The FDA's advice was that RAP should conduct a pivotal study at one or more US hospitals to augment the data that has been gathered from the Australian studies. The first site disclosed was the highly regarded Massachusetts General Hospital (MGH). The Cleveland Clinic is one of the other two sites to be included in the study. MGH was regarded as the fourth best hospital in the US for pulmonary disease in the 2015 / 2016 rankings of US News, and best overall.

The details of the study are yet to be finalised and we expect it to be completed in 2HFY17 with a primary endpoint of greater than or equal to 75% accuracy. We understand that the hospital standard for X-Ray is c75%.

The US study will seek authorisation of RAP's technology in children first, with subsequent studies to seek approval for adults.

It is noteworthy that testing for each individual is relatively quick, with testing of children taking at most c10 minutes to c15 minutes. In the Australian paediatric study, the patient was recruited in March 2015 and by May 2016, there were 598 patients enrolled. As of October 973 patients had been enrolled. This suggests that recruitment of the US study will not be difficult and a large sample will be possible to add strength to the data set.

Given the numbers of patients involved in respiratory illness and pneumonia in particular, we expect the FDA to keenly review the trial data. In 2015, the Centre for Disease Control (CDC) stated that "we need faster, less-expensive diagnostic tests for doctors to accurately diagnose the cause of pneumonia so they can effectively treat it". RAP's smartphone App with its sophisticated algorithm could just be the answer!

In September 2015, the FDA updated its detailed guidance on Mobile Medical Apps (MMA). The FDA has developed a very keen focus on MMA where health claims are intended to be made; appreciating that rigorous technology can be used productively to improve outcomes at lower cost. The FDA has approved over 200 MMA with some examples including:

- AliveCor Kardia – Hardware and App for a smartphone for measuring an ECG, including algorithms running on the smartphone to measure heart health.
- Gauss Surgical triton – An iPhone App for measuring blood loss during surgery, using the camera and image processing algorithms to estimate blood loss.
- PhysiQ – A machine learning algorithm to track and integrate multiple vital signs and measure against 'normal'' for a particular patient.
- AnthroTronix DANA – Mobile device measuring and testing brain function. Initially funded by the US Navy / Army

TRADITIONAL DIAGNOSES ARE COSTLY AND NOT SO RELIABLE

Currently, respiratory disease is diagnosed via a combination of listening to the chest via stethoscope, imaging (X-Ray & CT scans) and pathology tests. While pneumonia needs to be diagnosed quickly, the wrong diagnosis may lead to excessive and ultimately ineffective antibiotic use. Surprisingly, the wrong diagnosis happens all too often despite the apparent sophistication and acceptance of these traditional methods. Various studies evaluating the effectiveness of pneumonia diagnoses in US hospitals point to alarming levels of inaccuracy where at a minimum more than 20% of diagnoses are wrong. In one 2007 study of 112,000 Emergency Department visits that assessed the administration of antibiotics within 4 hours of admission, the wrong diagnosis was found in c60% to c70% of cases within the study (according to the strictest definition of assessment). The question is therefore what is driving the level of diagnosis error?

- Stethoscopes – listening to the chest has been part of the diagnostic tool kit for c2,500 years and the stethoscope has been in operation for c200 years. While it is a cheap instrument, it is not very accurate. A US veteran's hospital study in 1999 found that using a stethoscope for diagnosing pneumonia had a sensitivity of c47% to c69% and specificity of c58% to c75% and concluded that the traditional chest examination is not sufficient on its own to confirm or exclude a diagnosis of pneumonia. By contrast RAP has already demonstrated that its diagnostic algorithm can detect LRTI in c97% of cases where the doctors using stethoscopes initially missed the diagnosis.
- Imaging technology - X-Ray / CT scans can also be ambiguous. X-Rays have a well-documented low level of reliability in diagnosing pneumonia. CT scans have a higher level of performance but the radiation exposure has become a concern in the medical community, particularly with women. Lung ultrasonography does present as a more accurate device with accuracy >90% which is portable and relatively cheap compared with standard equipment.
- Blood tests – Pathology testing is expensive and not fast enough. There has also been a decline in the effectiveness of microbiological analysis with one US review of 17,000 patients hospitalised with community acquired pneumonia in 2009, showing that a probable pathogen was detected in <10% of cases.

There are more modern alternatives that are developing as well. Data for Lung ultrasonography is promising. While there remain some relative limitations compared with a CT scan, ultrasonography avoids radiation exposure, can be used outside of an intensive care unit (ICU) and is easily repeatable opening up the potential for a new era in respiratory monitoring in the ICU. DNA based molecular diagnostics should reduce in cost over time.

If the US FDA confirms the Australian data and approves RAP's smartphone App, it will be the first approval of its kind and represent a truly disruptive method of primary diagnosis of various respiratory conditions that is easily accessible and self-contained (no additional hardware).

MARKET OVERVIEW

RAP's smartphone diagnostic technology represents a possibility of fundamentally changing the manner in which various respiratory illnesses are diagnosed, creating significant opportunity for RAP, as well as cost saving opportunities for health systems across different jurisdictions. In this section we will look at the size of the market but also certain aspects of the structure of the most important health care market, the US, as this is where market launch will occur first.

The numbers are really large

The Global Asthma Report in 2014 identified c334m people with asthma globally, including c17.7m in the US, c30m in Europe, c2.3m in Australia and c150m in developing countries. It is generally observed that patient compliance to asthma medication is generally poor. The World Health Organisation (WHO) also estimates there are c65m people with COPD and c3m died of COPD in 2012, representing c6% of all deaths globally. It is also generally observed that respiratory illnesses such as asthma and COPD have a high prevalence in China.

Survey data from the Centre for Disease Control (CDC) in 2012 showed there were c82m visits to a physician's office where the primary diagnosis was a respiratory illness, and this represented c9% of the more than 900m physician office visits. Other sources can place the number as high as c125m visits or c10% of total visits. Visits related to cough could be as high as c35m visits annually.

RAP estimate via OECD per capita data there are c700m doctor visits for respiratory disease. Given that the US will be the key market for RAP to establish itself in, it is worth providing a few statistics on the key illnesses RAP claims it can diagnose with its algorithm based technology :

- Asthma – Over a fourteen year period to 2014, the National Health Institute survey showed that between c7.5% to c8.5% of adults in the US currently experienced Asthma, with the 2014 result at c7.9%. In 2014 the under 15 group had a prevalence of c8.6%. There appears to be a consistent bias with more males than females being exposed. While c17% of the US population still smoke, c21% of US smokers experience asthma.

- Chronic Bronchitis – According to the National Health Institute Survey in 2014, there were c8.7m episodes of adult chronic bronchitis or c3.6% of the adult population. Hospital discharge data from 2010 showed c614k discharges with the average stay at 4.5 days

- COPD (Emphysema) – In 2014, COPD was the third leading cause of death with c15.7m people reported being diagnosed with COPD or c6.4%. Some statistics put the number as high as c24m people. Smoking is a key driver of COPD incidence, with the 25 year risk of COPD from continuous smokers is c25%

- Croup – c15% of respiratory illnesses in children relate to Croup

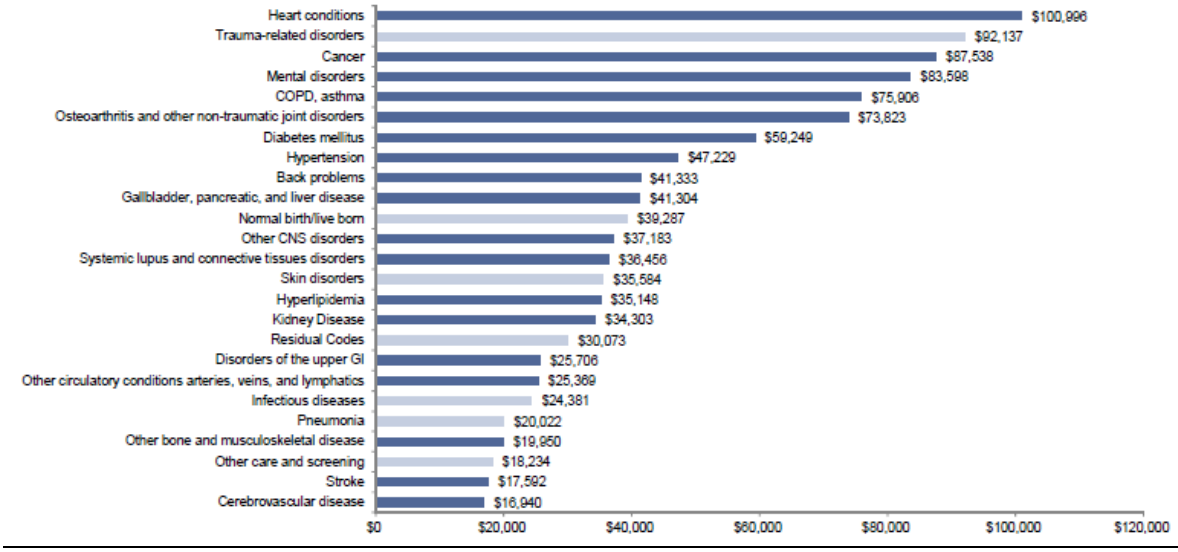
- Pneumonia – The most common reason for children to be hospitalised, with c1m adults also hospitalised and c50k deaths. In 2011, pneumonia had an aggregate cost of cUS$10.6b for 1.1m hospital stays, with an average stay of c5.2 days

- URTI - Adults develop colds c2 to c4 times per year and the economic impact of non-influenza URIs is c$40b annually

Estimates of the size of the global respiratory diagnostics market vary markedly. P&S Market Research valued the market at US$4.3bn and growing at c8% pa, whereas Australian company 4dx suggests the number is more like A$25bn pa assuming a population base of c1bn globally.

In the US, the average annual aggregate expenditure on COPD, Asthma and Pneumonia was estimated in 2012 to be at cUS$100bn. Diagnostic expenditure is obviously a subset of this but it is clearly significant, creating an attractive market place within which RAP can operate and penetrate.

Figure 6: Top 25 Diagnoses Ranked by Average Annual Expenditure in the US in USD



Source: National Medical Expenditures Panel Survey 2012

Digital Health – Attractive Emerging Territory

The pending US FDA trial on RAP's smartphone diagnostic is designed to target approval for the use in diagnosing children in a Telehealth setting. Subsequently, understanding the emerging Telehealth sector within the wider digital health market is worthy of some consideration.

US investment research suggests that digital health can have a significant impact on lowering US healthcare expenditure which is currently cUS$3tn. Some estimates place the total savings opportunity from the proper administration of "remote patient monitoring" (preventing hospital inpatient and emergency room visits) at cUS$200bn. Telehealth in the US is estimated to provide a further cUS$100bn savings opportunity from reducing the total number of standard office visits.

The revenue opportunity for Telehealth generally in the US has been estimated to be cUS$12bn+. As c30% to c50% of Telehealth consults relate to respiratory illness, **RAP is intending to enter a field that could be estimated directly at cUS$4bn to cUS$6bn annually, and where no accurate remote diagnosis is currently available**. Whether RAP's fee structure is based on a fee per test or subscription fee method, the base upon which fees are ultimately charged is highly attractive.

In addition to the success of the pending FDA trial, the critical success factor for RAP, is integrating into the US Telehealth market. Telehealth has developed substantially over the last few years and has been driven by the internet as a medium for delivering diagnostic information and treatment solutions, with "The Cloud" used for storing patient information. There are a range of key drivers behind Telehealth's momentum including:

- Internet and the Smartphone – Internet penetration in the US is now estimated at c90% with smartphone penetration believed to be c79% in early 2016.

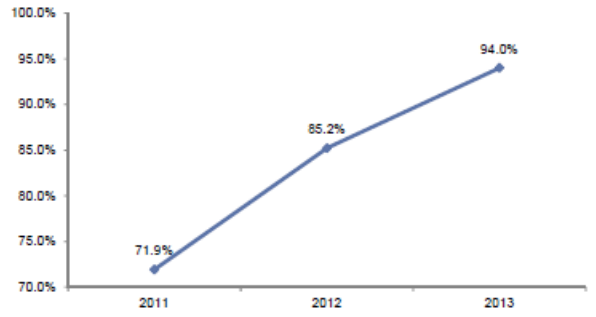
- Internet of Things (IoT) – Medical devices are being increasingly connected to the internet so they can be monitored remotely. Hospitals are now connecting their equipment to the internet.

- Wearable Devices – These are devices that gather data on various health indicators such as sleep patterns, heart rate etc. Companies like Fitbit and Apple Watch have enabled consumers to become comfortable with the concept of monitoring their own key health indicators and creating a more consumer centric focus in healthcare. Within Apple's operating system is a Cloud API called HealthKit, which integrates health and fitness data from multiple Apps and monitoring devices to form a digital data bank, thereby supporting the notion of the smartphone being used more intricately in consumer healthcare.

- Obamacare – Within the Affordable Care Act is a clause that imposes financial penalties on hospitals if patients are re-admitted to hospital within 30 days of discharge. Two of the five conditions for which penalties apply are pneumonia and chronic lung conditions. The others relate to heart and knee / hip replacements. In 2011, US hospitals spent cUS$41bn on patients re-admitted within 30 days of original discharge. Subsequently, Telehealth represents a low cost avenue for hospitals to follow-up discharged patients to avoid readmission events and the lower Medicare payments that ensue.

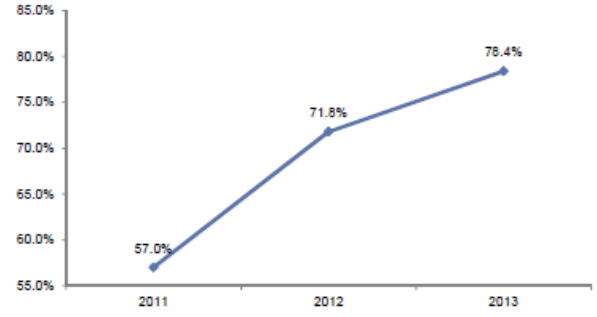
- Electronic Medical Records (EMRs) – One of the great enablers of digital health and healthcare practice has been the digitisation of data through EMRs. As part of the Affordable Care Act, the US Government has incentivised the adoption of EMRs through cUS$35bn in incentive payments and eventual reimbursement cuts for non-adopters. As of 2013, hospital adoption had risen to c94% and physician adoption had risen to c78%. The EMRs also included interactions or data exchanges with other healthcare stakeholders.

Figure 7: % of Hospitals That Have Purchased A Certified EMRs



Source: ONC, American Hospital Association

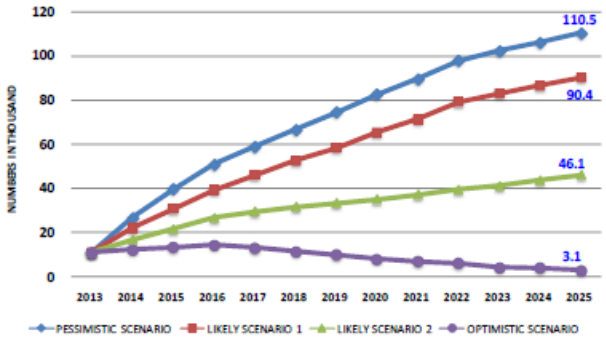
Figure 8: % of Physicians That Have Purchased A Certified EMR



Source: CDC

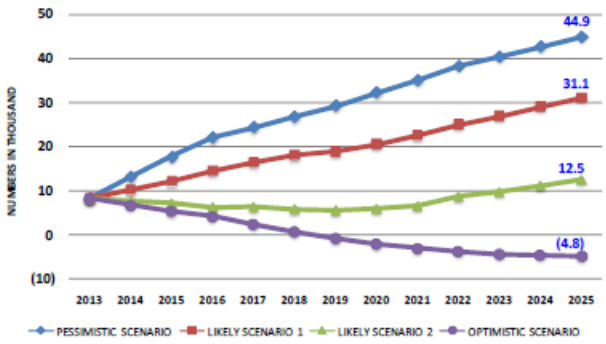
- Doctor Shortage – The US population is both growing and ageing and there is a growing challenge with accessing doctors in both the public and private systems. Telehealth can provide an efficient low cost mechanism to re-balance the workload of physicians to serve more acutely ill patients.

Figure 9: Projected Total Physician Shortfall



Source: HIS Inc, AAMC (March 2015)

Figure 10: Projected Primary Care Physician Shortfall



Source: HIS Inc, AAMC (March 2015)

- Big Data – A 2013 McKinsey report noted that over 200 businesses have been created since 2010, developing a diverse set of innovative tools to make better use of available healthcare information. McKinsey suggests that savings of cUS$300 – cUS$450bn could be generated from the US healthcare system from various Big Data initiatives. Big Data analytics could be highly beneficial to the Telehealth sector.

Telehealth is becoming pervasive

- One example of the popularity of Telehealth is its use by the US Veteran Affairs Department (VA). The VA delivered more than 2m Telehealth consults to 690,000 veterans in 2014, of which c55% were based in rural areas. In 2016 the VA expects to service c1.1m Veterans. The Telehealth budget is now >US$1.2b in a US$56b budget. Patient satisfaction with the Telehealth program is c86%.

- A study of a patients having surgery in a hospital in Virginia, showed that c92% of patients enrolled in the Telehealth program were discharged post-surgery directly to home as compared with the national average of c30%. As patients are prepared for the process there were fewer complications or concerns warranting a longer stay. In fact the hospital experienced a fall in average stay to 1.6 days as compared with the hospital average of 2 days and the national average of 3.6 days. In a separate study at John Hopkins Medicine in Baltimore, there was a c35% reduction in the length of patient stay.

- At Oregon Health & Science University, a telemedicine program for 970 patients, c45% of the patients was able to avoid travelling and generated cUS$6.4m in travel costs. This finding is supported by a VA program in Vermont which was assessed to save cUS$63,804 per patient through eliminating time and travel expenses.

- Towers Watson predicts that by 2018, c80% of employers will offer a Telehealth benefit to their employees. This is up from c22% in 2014 and c33% in 2015. The key drivers for employers include – reducing medical cost (81%); improving access to care (78%); making employees happy (56%); improving employee productivity (53%); attracting new talent (21%).

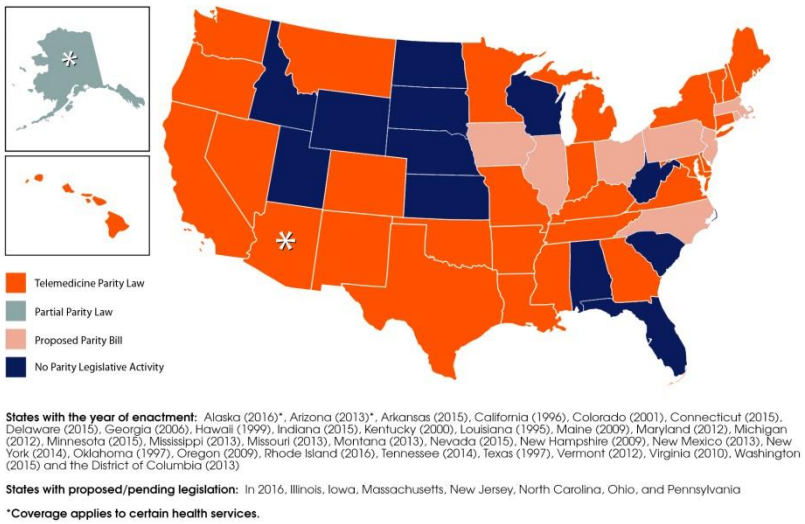
- In the on-demand world of Uber, Air BnB etc., it is not unreasonable to assume that this theme will confront the traditional Doctor's visit, waiting room and Doctor-Patient communication. Telehealth / Telemedicine can leverage off this theme and significantly reduce time wasted for patients and lift productivity for Doctors. US listed Teladoc estimates that median response times for patients is less than 11 minutes with patient satisfaction rates of c95%. This is a common perspective amongst other providers. The convenience factor for patients is significant compared with the travel and waiting room times for patients. Various estimates place the time saving at a range from 1 to 2 hours. Still, video conference Doctor consultations are limiting in that physical examinations cannot occur and therefore not all conditions are suited to this medium. If RAP's smartphone diagnostic is proven under an FDA trial, it will significantly boost the prospects of the medical fraternity's capacity to diagnose respiratory conditions remotely, and assist the whole Telehealth dynamic, given that a 2014 Deloitte report places respiratory conditions as responsible for c30% of Telehealth visits.

- Some estimates suggest that close to 50% of Doctor – Patient visits do not require physical contact, but this still implies a significant pool of consultations that can transition to a more productive and lower cost consultation method. Standard face-to-face consults appear to average US$200. A typical Telehealth consult would range from US$40 to US$50, with the Telehealth operator taking at US$10 commission on the Physician fee, so the savings potential is significant.

- The research arm of the US Department of Health and Human Services (Agency for Healthcare Research and Quality – AHRQ) reviewed 58 systematic reviews on Telehealth and determined that Telehealth provided benefits in terms of lower mortality, improved quality of life and reductions in hospital admissions when used for remote patient monitoring for certain chronic conditions, including respiratory disease.

- According to the American Telemedicine Association in 2015, in the three years to 2014, the number of US states with "parity laws" requiring commercial insurer to cover Telehealth consults at the same rate as regular Doctor visits increased to 24. There were 48 states where Medicaid agencies covered Telehealth to a limited degree, particularly in rural areas. States are also using Telehealth where there are Doctor shortages.

Figure 11: US States with Parity Laws for Private Insurance Coverage of Telemedicine in 2016



Source: American Telemedicine Association

REGULATORY LANDSCAPE

Given the critical nature of healthcare, and the slow pace at which healthcare regulation can move, it is worth noting some aspects of the US Healthcare Regulatory Framework that may impact RAP's potential.

- The US healthcare system contains a complex legal and regulatory environment where State's rights are embedded in the US Constitution which results in myriad law as and standards across different States. In 2014 the Federation of State Medical Boards (FSMB) adopted some measures to address some inefficiency in the system. It issued updated guidelines (non-binding) that serve as a standardised framework for the use of Telehealth technologies within states and across borders. The guidelines focused on the physician-patient relationship, continuity of care, referrals for emergency services, patient privacy and prescribing medication based on a Telehealth consultation. It also outlined a direct-to-consumer approach to Telehealth, where mandating a diagnosis and treatment of a patient should be held to the same standard of care as a traditional face-to-face consultation. The FSMB has also been working on medical license portability that expedites the interstate licensing process, while maintaining State oversight, accountability and patient safety.

- The Centres for Medicare and Medicaid (CMS) has been expanding its Telehealth physician reimbursement codes and in 2015 it recognised 75 CPT codes for Telehealth services. Medicare requires a beneficiary to be located in a designated rural area and to receive the consultation within a facility setting. The foundation is being set for further expansion, following which a wider spread of acceptance by commercial payers should ensue. The most widely covered Telehealth service under Medicaid is video conferencing with 46 states providing reimbursement.

- US healthcare costs approximate a stunning c18% of GDP, and pressure continues to mount to deliver higher quality care at a lower cost. One of the pressures on the system is the fee-for-service model that drives higher levels of volume and pricing without a correlation to better outcomes. In the fee-for-service model, incentives are allocated inappropriately, where providers are incentivised to treat but not cure patients, prioritize costly acute care over cost effective preventative care, and drive volume to costlier settings. These dynamics have driven a progressive shift to a fee-for-value model, with provider reimbursement levels linked to generating improved outcomes, both from a clinical and cost perspective. While the shift is still in its early phase, there are promising signs. In 2015, the CMS announced a goal of tying c30% to c50% of total Medicare payments to alternative payment methods by 2016 / 2018.

- Subsequently, there has been increased demand for digital health products and tools, as migrating care to more diverse and lower-cost care settings outside the hospital. Accompanying this development is the progressive shift by employers (the largest providers of health insurance coverage in the US) to transfer cost burdens to employees, in the form of higher "excesses", co-pays and coinsurance. As a result, consumers are becoming more accepting of digital tools that help them manage their health. This is also coupled with the previously mentioned, 30-day rule where hospitals are penalised if a patient is readmitted within 30 days of discharge.

We think that these drivers of access and cost place RAP in a strong position should the FDA approve its smartphone diagnostic tool for a range of respiratory illnesses in children.

DISTRIBUTION IS WHAT IT'S ALL ABOUT

Should the FDA approve this diagnostic tool, there would be several likely avenues with which to enter into distribution deals.

- Telehealth providers would be the first pathway to revenue, as the diagnostic tool subject to trials is seeking approval for use in Telehealth specifically. There were c75m (c205k / day) Telehealth consultations in the US in 2014, as reported by Deloitte, and IHS expect growth to average >50% through to 2018. We would expect RAP to be involved in discussions with various providers in a fragmented market that revolves around either a flat fee per test, as is typical in these situations, or alternatively on a subscription basis. Potential partners in this segment include, Teladoc; Amwell; MDLIVE; and Doctor on Demand. We would expect to see fee rates of cUS$5 to cUS$10 per consultation.

- Insurance providers would be an attractive target to reach a large footprint with optimal efficiency. Large payers such as United Health are increasing their focus on Telehealth as a means of attempting to bend the cost curve to lower US healthcare costs and shift the environment to a performance-based system. United Health has 16 Telehealth partners and manages up to c350k Telehealth consultations per day, including c20k people remotely monitored in their homes per day.

- Healthcare providers such as Emergency Departments in major hospitals could see the RAP diagnostic as a cost effective and timelier method relative to standard tools. This could extend to primary physicians in face-to-face consultations. Large Pharmacy chains such as Walgreens and CVS are also active in providing primary physician consultations and may be interested in extending their reach in the respiratory sector with an efficient tool like RAP's smartphone diagnostic.

- Global Charitable Organisations are showing interest in RAP's smartphone diagnostic tool, because of its efficiency and potential to achieve wide distribution. As pneumonia is a key risk across 3rd world nations, this would be the most likely target condition for such organisations. We see the model for this customer segment as one generating high volume with a low subscription price of up to cUS$1 per patient.

- There could be some scope for Big Pharma to gain access to aggregate data to assist with population segmentation to enable refinement in drug targeting.

COMPETITIVE LANDSCAPE

RAP has filed for a global patent covering its diagnostic algorithm. The patent has been publicly available for the past c18 months giving competitors an opportunity to circumvent the technology and build a better 'mouse trap'. RAP is attractive because –

- It claims to be able to perform differential diagnosis across a range of respiratory conditions

- Requires no extra hardware, with the App downloaded via Google / Apple

- Machine learning is embedded in the diagnostic tool so that it can continuously improve its capacity to diagnose respiratory illnesses accurately

- Has the potential to be approved by the FDA during 2H17 and commence selling by 1H18.

There are however, a range of competitors in the respiratory sector, most of which require hardware beyond a smartphone -

  - Breathresearch – a smartphone only breathing diagnostic that the Mayo Clinic is evaluating as a respiratory monitor for chronic lung and heart disease.

  - Cohero Health / Uscom (UCM) – Cohero developed inhaler sensors that track adherence for asthma medications. UCM developed a mobile spirometer which it sells to Cohero that is using it in the home care market in the US, using mobile phone connectivity to provide guidance of clinicians to choose appropriate therapy and follow up response monitoring. Cohero is also developing a home care asthma / COPD monitoring platform that uses UCM's mobile spirometers.

- Health Care Originals – developed a patch-type wearable asthma management device with a rechargeable battery that measures cough, respiration, wheeze and heart rate.

- Respiri (RSH) – developed a digital wheeze-detection system that is based on analysis of soundwaves. It involves capturing sound via a sensor, after which mobile phones are used to upload the data to the Cloud.

- Spire – developed a wearable device that tracks the wearer's breathing patterns looking for patterns that indicate stress, to facilitate better stress management

- Spirometrix – Developing asthma diagnostic based on exhaled nitric oxide, which is known as a promising biomarker. It uses solid-state sensors to detect Nitric Oxide at very small quantities based on ten seconds of exhaled breath. Spirometrix have connected the device to a system that allows physicians to follow-up patients remotely.

- Sparo Labs – developed an App-connected spirometer called 'Wing' that returns a green, yellow or red indicator on the smartphone screen showing the current state of the patient's lungs.

- Phillips (Respironics) – has a project to assist in the diagnosis of pneumonia in the developing world via an Automated Respiration Monitor (ARM) which uses accelerometers to measuring breathing rate. Breathing rate is one of the inputs to the WHO criteria which are currently used to diagnose pneumonia in the developing world. However, a breathing rate can be quite difficult to measure accurately. The WHO criterion is based on two clinical signs; breathing rate and the presence of cough. The ARM sensitivity is relatively high at c77% to c81% but it a very low specificity at c16% to c47%, which undermines its overall accuracy. It should be noted that Respironics is not attempting to make an actual diagnosis, but rather measure breathing rate to assist in diagnosing via the WHO criteria.

KEY RISKS

There are a number of key risks relating to RAP that include –

- FDA trial data does not meet the standard necessary to achieve regulatory approval.
- FDA approval may take longer than initially envisaged by RAP.
- Even if the data is satisfactory in the opinion of RAP, it may still not be approved for some other reason.
- RAP may not be able to achieve the pricing it has referred to despite the claimed cost and efficiency benefits to patients and other stakeholders of the US healthcare system.
- Cultural change is often the hardest barrier to breakdown, particularly in healthcare and the practices of Doctors. While RAP's diagnostic should be capable of being easily embedded into Telehealth Consultations and will also extend the reach of Telehealth consultations, the US healthcare system has been notoriously resistant to change that delivers efficiency, and only time will tell whether the Telehealth sector, a beach head for RAP, will actually embrace the technology and the change in medical practise that results.
- RAP is currently subject to valuation risk. At a market value of c$265m with no revenue, RAP needs success with the FDA and a strong ramp up in sales / earnings to be able to grow into the current valuation, let alone generating value accretion beyond current levels.
- There is also technology risk, where a competitor circumvents RAPs technology, either by developing something similar but managing to circumvent the patent waiting to be granted. Alternatively, a competitor might simply develop and distribute a better "black box" before RAP has had sufficient time to sell its diagnostic tool and embed it into general practice methods.

FINANCIALS

Our forecasts are based on the premise that RAP succeeds in attaining FDA approval. While we think there is a high probability of achieving approval, if it does not, these forecasts become redundant.

The Telehealth market in the US consisted of c75m consultations in 2014, and was growing at over 50% pa. In line with estimates by IHS on the Telehealth market, we assume this level of growth continues through to 2018. We estimate the Telehealth market will be at c169m consultations. We assume that in FY18, RAP can achieve a c3% market share, increasing to c4.7% in FY19.

If the respiratory segment of Telehealth is a minimum of c30% of Telehealth consultations, then our assumption translates to a c10% share of the Telehealth respiratory market. Given the gap in accurately diagnosing respiratory illness in a Telehealth environment, and the inherent demand by Telehealth operators, insurers and pharmacy chains, we assume that achieving 5m consultations in the first year is reasonable.

We understand that RAP is in discussions with a number of parties with a view to being ready to launch its offering by the beginning of FY18, subject to the FDA approval in 2HFY17.

We do think that the FDA approval is the critical threshold for RAP as the commercial model seems relatively friction free and would support the expansion of Telemedicine and assist in lowering healthcare costs, which is a goal that is a keen focus by a range of important stakeholders.

We assume that RAP will generate A$7.50 per consultation which translates to a US rate of c$5.50 based on an exchange rate of US$0.75. It is not yet clear whether RAP will succeed in achieving a fee per test as per the standard model in the health system or whether its potential customers insist on a subscription model, which would not have the same leverage as the fee per test arrangement.

In the humanitarian market, it is most likely there will be a subscription model, and the effective rate would be much lower than our base assumption, although the volume of usage would be much higher. We do not allow for humanitarian revenues at this stage, although based on ASX releases there is an expectation of some early movement on this front should the FDA approval occur.

The rate charged in the US could be as high as US$10 per consultation, but we have chosen a lower starting figure which we think will be important in incentivising take-up of the offering.

While our assumptions are only based on the US market, an FDA approval would expedite a European CE approval such that our assumptions would either prove conservative or alternatively they would be filled by a European contribution, particularly after FY18.

Figure 12: Earnings Forecasts

	FY17F $m	FY18F $m	FY19F $m
Consultation Volume (m)	0.0	5.0	11.0
Consultations	0.0	37.5	82.5
Revenue	**0.0**	**37.5**	**82.5**
			120.0%
EBITDA			
Consultations	-5.8	18.8	50.7
EBITDA	**-5.8**	**18.8**	**50.7**
		221.2%	169.8%
EBITDA Margin		**50.1%**	**61.4%**
EBIT	-5.8	18.8	50.7
NPBT	-6.0	19.2	51.3
NPAT	-6.0	**13.4**	35.9
EPS	-0.8	1.7	4.6

Source: Patersons Securities Ltd

In FY16, RAP consumed c$3.3m in operating costs. We have assumed significant increases in costs over the forecast period, but in reality we understand that operating costs should not need to be more than c$10m. Our operating cost assumptions are therefore quite conservative, which could result in a positive skew to EBITDA margins.

We note that there is a high level of uncertainty around forecasting companies that are pre-revenue and pre FDA approval. These forecasts not only assume the FDA approval occurs in 2H17 but also our view that the commercial dynamics appear quite favourable for a respiratory diagnostic solution, such as RAP's. However, the 'proof is in the pudding'.

VALUATION

Based on our base case earnings forecasts, we value RAP at $0.59 / share, using DCF valuation methodology and a 15% discount rate, which we consider reflects the risk profile of RAP. We have also applied the fully diluted shares in our valuation, taking into account all the restricted shares, performance shares and options which equate to 192.7m exercised shares.

Figure 13: Valuation Parameters

	$m	cps		
Explicit Cashflows	209.7	26.6	Risk Free rate	3.0%
Terminal Item	237.9	30.2	Equity Risk Premium	6.5%
Total Firm Value	447.6	56.9	Beta	1.85
Less: Net Debt	-13.7	-1.7	Cost of Equity	15.0%
Total Equity Value	461.3	58.6	WACC	15.0%
Fully Diluted Number of	786.8		Terminal gr rate	3.5%
Per share value	**0.59**			

Source: Patersons Securities Ltd

We have sensitised our base case valuation as depicted in figure 14. Each scenario assumes the FDA trials are successful and instead focus on the level of commercial success that may be achieved. We have only changed the volume of consultations that use the smartphone diagnostic and tilted these up and down through the forecast period.

Our analysis highlights there is a high level of valuation sensitivity to sales volumes. Although our low case would suggest that RAP is being successful in commercialising its product, current valuations would appear overstretched relative to cash flows being generated. Conversely, our high case suggests the potential of RAP is not yet being priced into market valuations.

Figure 14: Valuation Sensitivities

	Low Case	Base Case	High Case
Consultation Volume FY18 - FY21 (m)	**1.5 to 7.5**	**5 to 19**	**11.0 to 43.0**
Market Share FY18 - FY21	**0.9% to 2.0%**	**3.0% to 5.2%**	**6.5% to 11.7%**
	FY18	**FY18**	**FY18**
Revenue	11.3	37.5	82.5
EBITDA	3.9	18.8	71.2
EBITDA Margin	35.0%	50.1%	86.3%
NPAT	3.0	13.4	50.1
2 Stage DCF Valuation	**$0.17**	**$0.59**	**$1.79**

Source: Patersons Securities

BOARD / MANAGEMENT

Figure 15: Board Members

Name	Position	Shareholding / Options	Description
Dr Roger Aston	Non-Executive Chairman	16,875,000	Appointed in July 2015, Aston is currenlty the Chairman of OncoSil Medical and has extensive experience on boards of many pharmaceutical companies, and has been CEO of Pitney Pharmaceuticals Ltd, PSIMedica, pSiOncology Pty Ltd, Peptech and Cambridge Antibody Technology. Aston also served as the CEO of Mayne Pharma Group until February 2012. Aspects of Aston's experience include FDA and EU product registration, clinical trials, global licensing agreements. Half of Aston's interest is held in performance shares. Shareholding includes performance shares with a target of $20m in revenue.
Dr Tony keating	Managing Director	20,000,000	Appointed in July 2015. Keating has over 10 years' experience in commercialising technology. Keating created the initial business strategy for RAP. Previously, Keating was Director, Commercial Engagement at UniQuest Pty Ltd, one of the global leaders in commercialisation of univesity technology. Keating has also interim CEO and NED roles for a number of privately-held venture-capital funded start-up companies. Prior to joining UniQuest, Keating held business development and engineering management roles at Exa Corporation, a US based software company lised on the NASDAQ. Keating's financial interest is held via options.
Brian Leedman	Executive Director	55,185,000	Appointed in February 2016. Leedman is a marketing and investor relations professional with over 10 years' experience in the biotechnology industry. Leedman co-founded ResApp Diagnostics Pty Ltd which was acquired by Narhex Life Sciences Ltd to form ResApp Health. Previously, Leedman co-founded Oncosil Medical Ltd and Biolife Science Ltd (acquired by Imugene Ltd). Leedman was previously the Vice President Investor Relations for pSividia Corp. Leedman was former WA Chairman of AusBiotech, the association of biotechnology companies in Australia. Approximately 60% of Leedman's financial interest in RAP is in shares with the balance being mostly perofrmance shares and some options. Performance shares have a target of $20m in revenue. Leedman was also recently appointed as Director of Alcidion Group Ltd in July 2016.
Chris Ntoumenopoulos	Non-Executive Director	2,109,375	Appointed in January 2015. Chris wasa partner at CPS Capital, a WA based Stockbroking and Corporate Advisory firm. He has worked in financial markets for the past 12 yerars, focussing on Capital Raisings, Portfolio Management and Corporate Advisory. Chris is a Director of various private companies that span finance, technology and medical sectors.

Source: ResApp Health Ltd

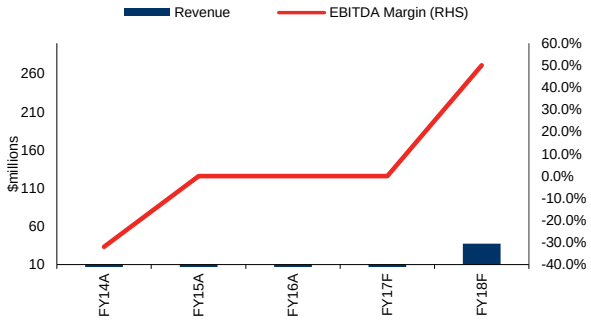
Resapp Health Limited (RAP) **$0.40**

Cash Flow ($m)	2016A	2017F	2018F	2019F
Adj. Operating Cashflow	**-2.4**	**-5.0**	**4.9**	**25.3**
Capex	0.0	0.0	0.0	0.0
Capitalised R&D	0.0	0.0	0.0	0.0
Disposals	0.0	0.0	0.0	0.0
Acquisitions	0.0	0.0	0.0	0.0
Earn-out Payments	0.0	0.0	0.0	0.0
Investing Cashflow	**0.0**	**0.0**	**0.0**	**0.0**
Equity Raised	12.0	0.0	0.0	0.0
Increase (Repay) Debt	0.0	0.0	0.0	0.0
Distributions Paid	0.0	0.0	0.0	0.0
Other	0.0	0.0	0.0	0.0
Financing Cashflow	**12.0**	**0.0**	**0.0**	**0.0**
Change in Cash Held	9.6	-5.0	4.9	25.3
Closing Cash Balance	**13.7**	**8.8**	**13.7**	**39.0**

Profit & Loss ($m)	2016A	2017F	FY18F	FY19F
Sales Revenue	0.0	0.0	37.5	82.5
COGS	0.0	0.0	0.0	0.0
Gross Profit	**0.0**	**0.0**	**37.5**	**82.5**
Operating Expenses	-3.3	-5.8	-18.7	-31.8
Associates	0.0	0.0	0.0	0.0
EBITDA	**-3.3**	**-5.8**	**18.8**	**50.7**
Depn & Amort	0.0	0.0	0.0	0.0
EBIT	**-3.3**	**-5.8**	**18.8**	**50.7**
Net Interest	0.1	-0.2	0.4	0.5
PBT	**-3.2**	**-6.0**	**19.2**	**51.3**
Tax expense	0.0	0.0	-5.7	-15.4
NPAT (Underlying)	**-3.2**	**-6.0**	**13.4**	**35.9**
Adjustment	0.0	0.0	0.0	0.0
Statutory NPAT	**-3.2**	**-6.0**	**13.4**	**35.9**
NPAT (Adjusted)	**-3.2**	**-6.0**	**13.4**	**35.9**

Segment Revenue ($m)	2016A	2017F	FY18F	FY19F
Telehealth	0.0	0.0	37.5	82.5
Total Revenues	**0.0**	**0.0**	**37.5**	**82.5**

Revenue & Margins



Balance Sheet ($m)	2016A	2017F	FY18F	FY19F
Cash	13.7	8.8	13.7	39.0
PP&E	0.0	0.0	0.0	0.0
Intangibles	2.3	2.3	2.3	2.2
Other	0.2	0.0	9.9	23.2
Assets	**16.3**	**11.0**	**25.9**	**64.4**
Payables	0.2	1.1	2.5	5.1
Borrowings	0.0	0.0	0.0	0.0
Other liabilities	0.0	-0.2	-0.1	-0.1
Liabilities	**0.3**	**1.0**	**2.4**	**5.1**
Shareholders Funds	**16.0**	**10.0**	**23.4**	**59.3**

EPS & DPS	2016A	2017F	FY18F	FY19F
EPS (Reported)	-0.4	-0.8	1.7	4.6
EPS (Adjusted)	-0.4	-0.8	1.7	4.6
EPS growth (%)	248.4	88.0	122.8	167.5
DPS	0.0	0.0	0.0	0.0
Payout Ratio (%)	0.0	0.0	0.0	0.0
Dividend Yield (%)	0.0	0.0	0.0	0.0

Valuation	2017F	FY18F	FY19F
DCF			
Beta			1.8x
WACC			15.0%
DCF per share			**$0.59**
Capitalisation of future earnings	**2017F**	**2018F**	**2019F**
EBITDA	-5.8	18.8	50.7
EV / EBITDA multiple	8.0x	8.0x	8.0x
Enterprise value	**-46.8**	**150.3**	**405.5**
Net cash/ (debt)	8.8	13.7	39.0
Equity value	**-38.0**	**164.0**	**444.5**
Equity value per share	**-$0.05**	**$0.21**	**$0.56**

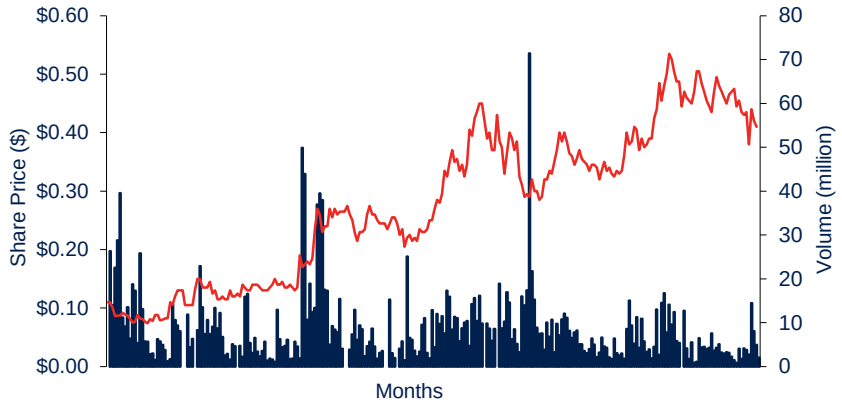
Ratios	2016A	2017F	FY18F	FY19F
Profitability				
NPAT Growth (%)	556.5	88.0	-322.8	167.5
Sales Growth (%)	na	na	na	120.0
Gross Profit Margin (%)	na	na	100.0	100.0
EBITDA Margin (%)	na	na	50.1	61.4
ROIC (%)	-142.1	-463.8	134.3	174.3
ROE (%)	-20.0	-60.2	57.3	60.5
ROA (%)	-20.2	-53.0	72.6	78.7
Tax Rate (%)	0.0	0.0	30.0	30.0
Valuation				
Price / Earnings (x)	-98.2	-52.2	23.5	8.8
EV / EBITDA (x)	-68.2	-39.2	11.9	3.9
Price / FCF (x)	-97.6	-49.7	51.8	9.6
Price / NTA (x)	17.4	30.6	11.2	4.2
Price / NA (x)	14.9	23.6	10.1	4.0
Balance Sheet				
Net Debt / Equity (%)	-85.6	-87.4	-58.5	-65.8
Net Debt / Assets (%)	-84.4	-79.3	-53.0	-60.6
Net Debt / EBITDA (x)	4.2	1.5	-0.7	-0.8
Interest Cover (x)	41.1	-29.9	-53.7	-92.6
NTA ($/share)	0.0	0.0	0.0	0.1
NA ($/share)	0.0	0.0	0.0	0.1
Shares (m)	594.6	594.6	594.6	594.6

Directors & substantial shareholders

Name	Position
Roger Aston	Independent Chairman
Tony Keating	Managing Director
Brian Leedman	Executive Director
Christopher Ntoumenopoulos	Non Exec Director

Shareholder	No. shares	%
Freeman Road Pty Ltd	44.0	7.6
FIL Limited	40.0	6.2
Total substantial	**84.0**	**13.8**

Recommendation History



Stock recommendations: Investment ratings are a function of Patersons expectation of total return (forecast price appreciation plus dividend yield) within the next 12 months. The investment ratings are Buy (expected total return of 10% or more), Hold (-10% to +10% total return) and Sell (> 10% negative total return). In addition we have a Speculative Buy rating covering higher risk stocks that may not be of investment grade due to low market capitalisation, high debt levels, or significant risks in the business model. Investment ratings are determined at the time of initiation of coverage, or a change in target price. At other times the expected total return may fall outside of these ranges because of price movements and/or volatility. Such interim deviations from specified ranges will be permitted but will become subject to review by Research Management. This Document is not to be passed on to any third party without our prior written consent.

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