



MediBio Ltd (MEB.ASX)

Objective diagnostic tool for mental health, a bright solution to a dark problem

Event:

- We initiate research coverage on MediBio Limited (MEB).

Investment Highlight: Data analytics applied to mental health

- MEB has created an innovative, data-driven solution to objectively diagnose mental health issues, including depression. It is currently rolled-out commercially in the corporate market with **initial enterprise customers signed**. From mid-2016 a downloadable consumer mass market app will become available, while the professional medical market will be addressed following US FDA approval, anticipated early 2017.
- The company aims to commercialise the technology mostly through **distribution and partnership agreements**, targeting medical service providers, health insurers, corporates etc. The current commercial pipeline should result in several substantial partnership agreements in the next several quarters.
- MEB's solution is essentially a **highly scalable data processing operation**, wrapped into a cloud-based service offering. We anticipate high **operational margins, i.e. in excess of 80%** long term and potentially higher, which is one of MEB's key attractions, in our view.
- MEB's patented **diagnostic tool** is based on the scientifically proven **correlation between mental health and the waveforms of patients' circadian heart rate**. Through a heart rate monitor worn at night, data is collected and subsequently analyzed using MEB's cloud-based proprietary algorithms that have a diagnostic accuracy of up to 92%.
- The technology provides an **objective diagnosis of various forms of mental depression**, enabling a substantial increase in first-time-right treatment of patients and helps prevent early-stage mental health issues developing into severe forms of depression. It has the potential to **save companies and societies billions of dollars** in costs, through prevention and proper treatment. Hence, the company already experienced **great interest in its offering from health insurers, medical service providers and corporates**.
- Mental depression is a global problem with tremendous costs to societies, totaling US\$2.5TR globally. In addition, at a personal level depression can lead to substantial suffering for individual patients, resulting in 1M suicides per year globally. The main problem in diagnosing various forms of depression today is a lack of objective measurement and diagnostic tools, which MEB solves.

Earnings and Valuation:

- Valuation metrics for early-stage peers active in data analytics and medical devices (IVO, SMV, CVT) imply a **value per share of approximately \$0.60**.
- However, taking into account the valuation of closest comparable Catapult Sports (CAT) suggests a value per share in excess of \$1.00.

Recommendation:

- We start research coverage of MEB with a **Speculative Buy** rating and a **\$0.60 price target**. However, we see substantially more upside once business model validation is achieved through agreements with major medical services and insurance companies.

Rating	Speculative Buy
Previous	NA
Price Target	A\$0.60
Previous	N/A
Risk	High

Share price	A\$0.41
ASX code	MEB
52 Week Low-High	\$0.20-0.48

Capital Structure	
Shares on Issue (M)	74
Market Cap (A\$M)	30.5
Net Debt/(Cash) (A\$M)	2.7
EV (A\$M)	33.2
Escrowed shares	24
Options on issue (M)	23.9
Diluted mkt cap (A\$M)	50.1
12mth Av Daily Volume ('000)	186

Y/e Jun (A\$M)	2015a	2016e	2017e	2018e
Sales \$M	0.3	2.6	11.9	33.4
EBITDA \$M	-2.9	-1.2	4.8	24.4
NPAT \$M	-7.9	-1.7	2.5	16.3
EPS c	-17.0	-1.4	2.1	13.6
PER x	N/A	N/A	19.6	3.0
EV/EBITDA x	N/A	N/A	7.0	1.4

Board of Directors

Chris Indermaur	Chairman
Kris Knauer	Executive Director
James Campbell	Non Executive Director

Major Shareholders

Claude Solitario	12.8%
Stephen Addis	12.5%
Kris Knauer	6.6%

Share Price Graph



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Foster Stockbroking acted as Sole Lead Manager to MEB's \$3.1M Placement in September 2015. Foster Stockbroking received a fee for this service and is also engaged by MEB to provide corporate services for which it has earned fees and continues to do. Services include, but are not limited to, capital markets advisory, research, and marketing roadshows.



Medibio (MEB)

Full Year Ended 30 June

Profit and Loss A\$M					Financial Metrics				
	2015a	2016e	2017e	2018e		2015a	2016e	2017e	2018e
Sales revenue	0.3	2.6	11.9	33.4	Sales growth %	nm	909%	364%	180%
Total operating Costs	-3.2	-3.7	-7.2	-9.0	EPS growth %	nm	-92%	-252%	549%
EBITDA	-2.9	-1.2	4.8	24.4	EBITDA margin	nm	-45%	40%	73%
D&A	-0.5	-0.7	-0.7	-0.7	EBIT margin	nm	-72%	34%	71%
EBIT	-3.5	-1.9	4.1	23.7	Gearing (ND/E)	30%	29%	3%	-54%
Net Interest exp / (income)	-0.2	-0.2	-0.2	-0.2	Interest Cover (EBIT/net int)	nm	9.2x	-20x	-157x
Profit before tax	-3.6	-2.1	3.9	23.5	Average ROE %	nm	-17%	21%	77%
Tax exp / (benefit)	0.0	0.4	-1.4	-7.2	Average ROA %	nm	-10%	16%	58%
NPAT before minorities	-7.9	-1.7	2.5	16.3	Wtd ave shares (M)	98	98	98	98
Minority interest	0.0	0.0	0.0	0.0	Wtd ave share diluted (M)	47	120	120	120
Rep. NPAT	-7.9	-1.7	2.5	16.3					
Significant items	0.0	0.0	0.0	0.0					
NPAT attributable reported	-7.9	-1.7	2.5	16.3					
EPS diluted (c)	-17.0	-1.4	2.1	13.6					
Cashflow A\$M					Valuation multiples				
	2015a	2016e	2017e	2018e		2015a	2016e	2017e	2018e
Net income	-7.9	-1.7	2.5	16.3	P/E x	N/A	N/A	19.6	3.0
Depreciation & amortisation	0.5	0.7	0.7	0.7	EV/EBITDA x	N/A	N/A	7.0	1.4
Change in WC	0.5	-2.1	0.0	0.0	EV/EBIT x	N/A	N/A	8.1	1.4
Other items	0.0	0.0	0.0	0.0	EV/sales x	N/M	12.9	2.8	1.0
Operating Cashflow	-6.9	-3.1	3.2	17.0	Dividend yield %	0.0	0.0	0.0	0.0
Net change in PP&E	0.0	-0.3	-0.3	-0.4					
Other items	0.0	0.0	0.0	0.0					
Investing Cashflow	0.0	-0.3	-0.3	-0.4					
Equity proceeds	3.4	3.1	0.0	0.0					
Change in debt	1.0	0.0	0.0	0.0					
Net Cashflow	-2.4	-0.30	2.9	16.6					
Balance Sheet A\$M					Valuation				
	2015a	2016e	2017e	2018e		A\$M	A\$/share		
Cash	0.9	0.6	3.5	20.1	EV/Sales 4.0x FY17:				
Receivables	0.2	0.3	1.5	4.1	Enterprise value	74.0	0.62		
Inventories	0.0	0.0	0.0	0.0	Net cash(debt)	0.7	0.01		
Net PPE	0.0	0.3	0.6	0.9	Equity value	73	0.61		
Other fixed assets	14.0	13.3	12.9	12.7	EV/EBITDA 15.1x FY17:				
Total Assets	15.2	14.6	18.4	37.8	Enterprise value	71.9	0.60		
Accounts payable	2.4	0.3	1.5	4.1	Net cash(debt)	0.7	0.01		
Other current liabilities	0.2	0.2	0.4	0.9	Equity value	71.2	0.59		
Non-interest bearing liabilities	0.0	0.0	0.0	0.0					
Long term debt	3.5	3.5	3.5	3.5					
Total Liabilities	6.1	4.1	5.4	8.5					
Reserves and capital	51.6	54.7	54.7	54.6					
Retained earnings	-42.5	-44.1	-41.6	-25.3					
Total Equity	9.1	10.6	13.0	29.3					
Segmental analysis (A\$M)					Shares on issue				
	2015a	2016e	2017e	2018e		M			
Revenues from Corporate market		0.8	10.3	20.3	Ordinary shares	74.3			
Revenues from Medical market		0.0	0.0	7.0	Escrowed shares	23.9			
Revenues from Consumer market		0.0	0.7	6.1	Options	21.5			
					Fully Diluted	119.8			
Major shareholders					Interest				
Claude Solitario						12.8%			
Stephen Addis						12.5%			
Kris Knauer						6.6%			

Source: Company; Foster Stockbroking estimates

OBJECTIVE DIAGNOSES THROUGH ANALYSIS OF HEART RATE PATTERNS

Objective, highly accurate diagnosis

- MEB has developed a quantitative test to diagnose various forms of depression through analysis of patients’ circadian heart rate patterns, i.e. when they are sleeping, based on the scientifically proven correlation between heart rate patterns and depression.
- MEB’s solution provide an objective method to diagnose a person’s mental health, and is up to 92% accurate, meaning that most patients will receive the appropriate treatment immediately. In turn this will result in substantial cost savings to society and a faster recovery for the patient.
- The company’s service offering is essentially a data analytics solution using proprietary algorithms to establish the state of mental health, i.e. heart rate data is uploaded to MEB’s cloud and is subsequently processed at extremely low marginal costs, resulting in highly attractive operating margins.

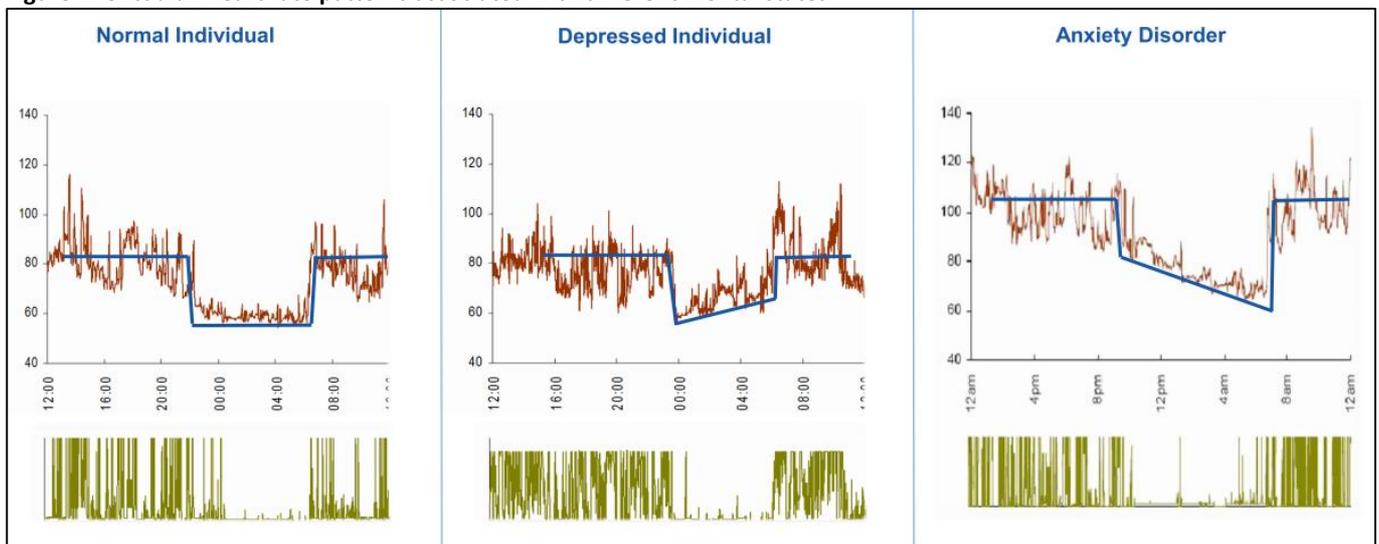
Very high margin business

THE THEORY AND TECHNOLOGY BEHIND MEB’S ALGORITHMS

Proprietary algorithms to analyse CHR

- MEB’s technology is based on the correlation between a person’s Circadian Heart Rate (CHR) and his or her mental health. In other words, a change in a person’s mental health will be reflected in the waveform of this person’s heart rate, which will be particularly visible during sleep.
- When a person is asleep no external influences are present and the body will be in a constant state of inactivity for a prolonged period of time, making the nighttime the best period to sample a person’s heart rate using a standard heart rate monitor.
- The origin of MEB’s technology is the theory that changes in mental health induce changes in the nervous system, which in turn can be observed through disturbances in heart rate patterns. The research to support this theory was initiated in the mid-90s by the University of Western Australia and has since been validated by third party researchers and published.
- MEB has developed proprietary algorithms to analyse CHR’s and link waveforms to mental health. The typical CHR of a healthy individual will be stable throughout the night, whereas depressed individuals or patients with anxiety disorders will exhibit irregular heart rate patterns (figure 1).

Figure 1: Circadian heart rate patterns associated with different mental states



Source: Medibio, Foster Stockbroking

MULTI TIERED ROLL OUT STRATEGY: CORPORATE, MEDICAL AND CONSUMER

Commercialisation through distribution and partnerships agreements

- MEB is targeting three separate markets with its diagnostic tools, the corporate, medical and consumer markets, each representing a significant revenue opportunity and each requiring different approaches to marketing and regulatory approval. For this reason, the company is primarily focused on distribution and partnership agreements with third parties, such as wellness providers, medical insurance companies as well as medical distribution and devices companies to market its CHR product. MEB only employs 2 sales people directly at this time.

CORPORATE MARKET ROLL OUT COMMENCED

Ideally suited for companies with high-risk roles

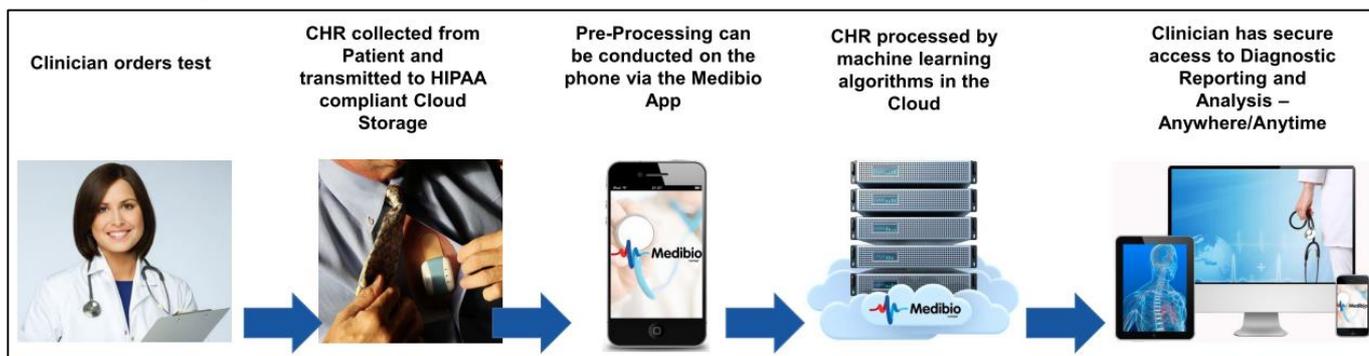
First corporate customer signed

Wellness partner program delivers first customer

Addressable US corporate market of US\$4BN

- The market for MEB's corporate stress product largely pertains to companies wanting to check and monitor mental health of employees in high-risk roles, e.g. in management or operating offshore, as well as companies wanting to check the pulse of their entire employee base to lower absenteeism and increase productivity. Depending on customer size, MEB also offers tailor-made versions of its mobile application, used for online mental health training, to corporate clients.
- Typical corporate customers would be those with high-risk roles, such as in military, rescue and emergency services and offshore activities including oil & gas. Additionally, we anticipate high interest in MEB's offering from medical insurance companies.
- The company signed its first corporate agreement with an Australian company in August. This customer employs 10,000 people and the agreement comprises several phases in which stress levels for a pilot population are assessed and followed up by intervention and re-assessment. This will provide MEB and the customer with an objective measure of changes in employee stress levels. Subject to the results of the pilot program MEB anticipates that the program will be rolled out to the customer's entire employee base. MEB charges \$100 per test and anticipates revenues from this agreement in the current calendar year (2015).
- Generally for the corporate stress market, MEB anticipates price levels of \$120 for executives and at risk personnel and <\$60 per employee per year when companies test their entire staff base.
- On November 6th, large mental healthcare provider Vital Conversations, one of MEB initial commercial partners, announced it **signed its first, unnamed, customer**, a company with 200,000 employees worldwide, of which 5,000 are in Australia. The pilot project will initially address the company's Western Australia's employees.
- The addressable corporate market in the US is approximately US\$4BN in size, based on 76M corporate and government employees in the US and the assumption of an annual revenue per tested employee between US\$40 and US\$60. Net revenues to MEB will amount to approximately 30% to 35% of this amount. Distribution partners will receive approximately 30% while another 30% will be allocated to the medical practitioners as part of reimbursement or private payment.

Figure 2: MEB diagnostic tool data collection and analysis process for Medical Market



Source: Medibio, Foster Stockbroking

FDA APPROVAL ANTICIPATED BY 1Q17

FDA approval needed for roll out in the US

- Potentially the largest market for MEB, at US\$30BN in size, is the **market for medical professionals**, such as Primary Care Physicians (PCP), psychologists, psychiatrists, counsellors and therapists (figure 2). However, in order to address this market, MEB will need regulatory approval, including FDA approval in the US.
- This is where the research currently conducted by Johns Hopkins is important (see below). Following their assessment of the extent to which MEB's algorithms can distinguish between various types of mental health, MEB aims to apply for FDA approval of its depression diagnostic tool through a so-called 510(k) Pre-Market Notification Application in mid-2016 (figure 3). The company anticipates a decision by early 2017, which will lead to a formal reimbursement plan.

Figure 3: Roadmap to FDA approval through 510k Pre-Market Notification



Source: Medibio

Addressable US medical market of US\$1BN

Leveraging off existing reimbursement codes

- Under Medicare code 93226, MEB anticipates an average reimbursement per test of US\$45 in the United States, 30% to 35% of which will be paid to MEB’s distribution partners.
- If and when FDA approval is received, the depression diagnostic tool will act as a predicate device for FDA approvals for anxiety, Post-Traumatic Stress Syndrome, panic disorders, psychosis etc, which should expedite approval for these indications.
- The clinical market for mental health diagnostics in the US is made up of more than 20M annual visits to General Practitioners and PCP’s, which at an average price of US\$45 per test, translates into an addressable market of nearly US\$1BN.
- This does not take into account the market for ongoing monitoring, i.e. patients that are being treated and may need up to four tests per year priced at US\$22.50 per test.

Clinical validation by Johns Hopkins

Third party clinical validation by renowned institutes

- In order to have its technology independently validated and in support of an eventual bid for FDA approval in the United States, MEB is working together with a renowned medical institution in the United States. Johns Hopkins University School of Medicine is doing an independent clinical validation study regarding the use of MEB’s CHR algorithms to differentiate between depressed and non-depressed subjects.
- In a separate study conducted by the Black Dog Institute, MEB is working together with the University of New South Wales to demonstrate that its algorithms can distinguish between melancholic and non-melancholic depression.
- Given that both institutes already have ample data sets available for analysis, results from both studies should become available quite soon, i.e. in the next few quarters.

Consumer app to be launched mid-2016

CONSUMER APPLICATION TO BE AVAILABLE FOR MOBILE DOWNLOAD

- MEB will also be launching a mobile app for the consumer market, called “my Bettermind” downloadable from Apple’s App Store and Google’s Play Store. For an initial price of \$5, consumers can use the full functionality of the app for a month, including stress management interventions. A \$10 annual subscription will also be available, which allows consumers to take as many tests as they like and allows for progress monitoring.
- Stress Doctor by Azumio is a competing app but with not nearly the same functionality and clinical research-proven diagnostics capabilities. Stress Doctor has seen 1M free downloads from Google’s Play Store and close to 60M downloads over five years in Apple’s App Store at \$7.99 each.
- MEB is currently developing and testing “my Bettermind” and anticipates launch of the app in the second half of 2016.



Up to 27% of people in developed world suffer from mental health issues

BACKGROUND: DEPRESSION IS A GLOBAL PROBLEM

- It is estimated¹ that approximately 350M people worldwide suffer from some form of depression, i.e. mild, moderate or severe. This distinction depends on whether the symptoms are recurring and whether patients experience manic episodes. In developed markets, such as Australia, Europe and the United States, up to 27% of the adult population suffer from some form of depression.
- Generally speaking, patients with mild forms of depression will still be able to function in work and social contexts. Severe depression will typically result in patients not being able to function in these contexts and may lead to hospital admittance for monitoring, medication and treatment purposes.

Global costs of mental health issues totals US\$2.5TR

SUBSTANTIAL COSTS TO SOCIETIES

- Depression results in an approximate 1M suicides per year globally, while 6M working days are lost due to mental health issues each year in Australia alone. The treatment costs related to mental illness in Australia amount to approximately A\$600M annually, while the overall disability costs in Australia totals nearly A\$ 15BN annually. Treatment costs in the United States total US\$10BN annually.

On a global scale the costs of mental health conditions adds up to approximately US\$2.5TR².

FORMS OF DEPRESSION

- Mental health disease comes in various forms and can develop or be triggered by a number of different so-called life events, such as severe traumas, long term unemployment, abuse, long term isolation and loneliness. In addition, personal characteristics, such as genetic risk, personality and tendency for substance abuse can contribute to the development of mental illness.
- The most common forms of mental illness include, depression, anxiety, panic disorders, psychosis, schizophrenia, Post-Traumatic Stress Disorder and “regular” stress.

Diagnoses still mainly done through subjective testing

THE PROBLEM: NO ACCURATE OBJECTIVE DIAGNOSES OF DEPRESSION AVAILABLE

- Given the tremendous costs to societies and suffering at a personal level, properly diagnosing patients in order to set up the most effective treatment plan is vital. Currently, most patients are initially evaluated by their GP who may refer them to psychologists or psychiatrists. In trying to diagnose patients, the psychologist or psychiatrist will typically ask a range of questions in order to diagnose the ailment.
- However, there are several issues with this method, the most prominent one being subjectiveness. Studies have shown that different specialists only concur on the diagnosis of one and the same patient in approximately 70% of cases. In other words, specialists diagnosing the same patient reach different conclusions 30% of the time, meaning a large part of patients are misdiagnosed.
- Misdiagnoses of mental health issues leads to several problems. At a personal level the patient will not receive the proper treatment or may receive no treatment at all, and may suffer from the disease longer than would have been the case with proper diagnoses.
- Additionally, misdiagnoses results in a substantial burden to the healthcare system and societies at large, due to prolonged patient disability and additional treatment costs.

In our view, MEB’s solution to a large extent solves the issues above and should be regarded as complementary to existing medical treatments.

¹ World Health Organisation (2015)

² Society for Neuroscience



**CHR used to diagnose
sleep disorders**

MEB EXPANDING BEYOND DEPRESSION

- Through a recent research agreement with an affiliate of the University of Ottawa, MEB is expanding the assessment of its CHR diagnostic tool to sleep disorders. The study aims to assess whether the CHR technology can distinguish between individuals with mental disorders, sleep disorders and healthy individuals. Given that the study will draw upon the Royal Ottawa Mental Health Centre's existing database of CHR's and clinical diagnoses, MEB expects a relatively fast turn-around on the results and peer review.

COMPETING TECHNOLOGIES ARE SUBSTANTIALLY MORE EXPENSIVE

In addition to the traditional interviews with psychologists and psychiatrists, there are several alternative technologies to measure stress and/or depression. These include:

- Blood tests that analyse nine blood markers and deliver up to 90% accuracy, i.e. similar to the accuracy of MEB's CHR technology.
- Electroencephalogram's (EEG) that measure brain activity during a period of three hours through multiple electrodes placed on the scalp. The accuracy of this test is currently around 80%.
- Electrovestibulography (EVG), which measures electrical responses emanating from the vestibular system as a result of patients' balance system being manipulated in special tilt chairs. Diagnostic accuracy is on par with MEB's.
- Saliva and hormone tests mainly aimed at measuring stress levels, not depression.

**Competing tests cost
up to \$800**

All of these alternatives are substantially more expensive (\$300 to \$800 per test) than MEB's solution on a per test basis without delivering higher diagnostic accuracy, which is why we expect medical insurance companies and government-funded health care organisations to favor MEB's cheaper solution.

SPIN OFFS FROM MONITOR DATA PROVIDE LONG TERM POTENTIAL FOR MEB

- The professional heart rate monitors that health insurers, wellness companies and other medical services companies are looking to use in conjunction with MEB's CHR diagnostics tool, can capture more data than just heart rate. For instance, professional heart rate monitors currently on the market are also able to capture data such as blood pressure and arrhythmias, which can provide clues of future medical indications.
- Going forward, MEB will be looking to analyse this (residual) data and develop algorithms that can be applied in preventative care for people in high-risk categories, providing further added-value to the target market and thus revenue opportunities for MEB.

**Data on blood pressure
and arrhythmia also
collected**

PATENTS AND BARRIERS TO ENTRY

- MEB holds a number of patents related to diagnosing and monitoring psychiatric disorders and stress assessment. The company's current patents in the US and Canada will expire within four years. However, last April MEB lodged patents building on these existing ones, which include new IP. If and when granted, this will provide the company with another 20 years of patent coverage in North America.
- In addition to the company's patent portfolio, MEB's large database of electrocardiograms (ECG) paired with traditional psychiatric diagnoses, i.e. the validation of its algorithms, presents a substantial barrier to entry to the CHR-based mental health diagnostics market.
- However, while barriers to entry for mental health diagnostics using CHR-based diagnostics exist given MEB's IP portfolio, a price breakthrough in one of the other technologies we described, i.e. price points below US\$100 per test, will open up the market for such technologies, in our view, diminishing the potential for MEB.

**Barriers to entry:
Patents, IP database
and low price**



IMPRESSIVE MANAGEMENT AND ADVISORY BOARD

MEB has entered the current commercialisation phase of its lifecycle with the backing of an impressive team.

- In addition to Executive Director Kris Knauer (see appendix 3), COO Sean Mathieson brings substantial experience in developing and building software businesses at Oracle, SAP, Siebel Systems and UXC.
- Dr. Matt Mesnik (Chief Medical Officer) is very well-connected in the US healthcare market with thirty years of experience gained. at Aprima Medical Software and MinuteClinic, the largest US retail health clinic provider with over 10M annual primary care visits, which was acquired by CVS Pharmacy.
- Furthermore, Advisory Board Member Dr. Franklyn Prendergast is currently on the Board of Directors at Eli Lilly and has been involved with the Mayo Clinic and medical school in a number of roles, Chair of the Board of Governors of the Mayo Foundation, Chair of the Department of Biochemistry and Molecular Biology at the Mayo Foundation, Guggenheim Professor of Biochemistry and Molecular Biology at the Mayo Medical School (retired-January 2015) and Director at the Mayo Clinic Center for Individualized Medicine and Mayo Clinic Comprehensive Cancer Center. We believe Dr. Prendergast is considered an authority in his field.

REVENUE MODEL: THREE VERTICALS

Key assumptions

- Following the initial customer win in the Corporate segment, we assume four further corporate customers will be signed in the current fiscal year.
- The average revenue per test net to MEB is assumed to be A\$15 in the Corporate market, while we assume customers will conduct two tests per year on average. High stress roles, such as firefighters and other emergency workers, military personnel, senior management positions and offshore workers, will likely require two or more tests per annum, while for roles that are associated with more “normal” stress levels one test per year will likely suffice.
- We assume MEB will receive US FDA approval in 3Q17 (March 2017 quarter), resulting in initial revenues from the Medical segment in the US six months later, i.e. in 1Q18, with initial market penetration of 0.2% in that quarter. We anticipate a penetration rate/market share for MEB of 1% by 4Q19 implying revenues from the US Medical market of approximately A\$17M in FY19.
- Based on existing reimbursement codes in the US, we assume MEB will receive US\$29.25 (65% of US\$45 reimbursement) per initial evaluation test (with 35% earmarked for distribution partners). Revenues for follow up monitoring tests are assumed to amount to US\$14.63 net to MEB (65% of US\$22.50).
- The consumer app is assumed to start generating revenues from 2Q17 onwards through App Store and Play Store downloads at A\$5 each.
- While MEB is able to supply its customers with various types of heart rate monitors, the pricing strategy is currently still being developed. We do not anticipate substantial revenues to MEB from heart rate monitors as these are third party medical devices that MEB will sell on at zero margin or a limited mark-up. Additionally, customers may source monitors independently from MEB. Overall, we anticipate revenues from heart rate monitors will be relatively limited within the bigger picture. For these reasons, we have not included revenues from heart rate monitors in our forecast. The assumptions above translate into the following revenue forecasts for FY17 and FY18 (figure 4). Product revenues for FY16 are expected to still be very limited (~\$774k). In addition to product revenues as illustrated below, we anticipate R&D rebates in FY16 and FY17 of \$1.8M and \$0.9M respectively.

\$15 per test in corporate market

First revenues from Medical segment mid-2017

No revenues from heart rate monitors



Figure 4: Revenue model FY17 and FY18

Revenue model	FY17				Full year	FY18				Full year
In A\$	Q1	Q2	Q3	Q4	FY17	Q1	Q2	Q3	Q4	FY18
Corporate market										
# Active Corporate clients	6	8	9	11		12	13	14	15	
# of tested employees / client	27,500	35,000	42,500	50,000		50,000	50,000	50,000	50,000	
Avg. # test / year	2	2	2	2		2	2	2	2	
Avg. price / test A\$	15	15	15	15		15	15	15	15	
Revenues from Corporate clients	1,237,500	2,100,000	2,868,750	4,125,000	10,331,250	4,500,000	4,875,000	5,250,000	5,625,000	20,250,000
Medical market										
United States										
New diagnostic patients	5,000,000	5,000,000	5,000,000	5,000,000		5,000,000	5,000,000	5,000,000	5,000,000	
Medibio market penetration	0%	0%	0.0%	0.0%		0.2%	0.4%	0.5%	0.6%	
Avg. price / test A\$	40.63	40.63	40.63	40.63		40.63	40.63	40.63	40.63	
Revenues from initial diagnostics	-	-	-	-	-	406,250	812,500	1,015,625	1,218,750	3,453,125
Ongoing monitoring patients	16,000,000	16,000,000	16,000,000	16,000,000		16,000,000	16,000,000	16,000,000	16,000,000	
Medibio market penetration	0%	0%	0%	0.0%		0.0%	0.2%	0.4%	0.5%	
Avg. price / test A\$	20.31	20.31	20.31	20.31		20.31	20.31	20.31	20.31	
Revenues from ongoing monitoring	-	-	-	-	-	-	650,000	1,300,000	1,625,000	3,575,000
Total revenues Medical market	-	-	-	-	-	406,250	1,462,500	2,315,625	2,843,750	7,028,125
Consumer market										
# app downloads	-	10,000	30,000	100,000		150,000	225,000	337,500	506,250	
Avg. price / download	5.00	5.00	5.00	5.00		5.00	5.00	5.00	5.00	
Revenues from app downloads	-	50,000	150,000	500,000	700,000	750,000	1,125,000	1,687,500	2,531,250	6,093,750
Total revenues	1,237,500	2,150,000	3,018,750	4,625,000	11,031,250	5,656,250	7,462,500	9,253,125	11,000,000	33,371,875

Source: Foster Stockbroking estimates

HIGHLY SCALABLE MODEL, EBITDA MARGINS >70%

- As alluded to earlier, MEB's service offering is a data analytics process that takes place on the company's cloud-based servers. Once CHR data is received it is processed and diagnosed within seconds at a marginal cost of several cents. Commercial pricing will likely range from \$5 to \$120, depending on customer type and volumes. If MEB is able to achieve significant traction and testing volumes, i.e. a range of customers across the different verticals, the business model should allow for very high leverage. Therefore, we anticipate operating margins in excess of 70% to 80% (figure 5).

Figure 5: Earnings summary

A\$ M	2015F	2016F	2017F	2018F	2019F
Revenues	0.3	2.6	11.9	33.4	61.1
EBITDA	-2.9	-1.2	4.8	24.4	50.1
EBITDA margins	N/M	N/M	40%	73%	82%
NPAT	-7.9	-1.7	2.5	16.3	34.6
EPS fully diluted (c)	-0.17	-0.01	0.02	0.14	0.29

Source: Foster Stockbroking estimates

PEER GROUP VALUATION: CATAPULT SPORTS CLOSEST COMPARABLE

- We have constructed a peer group consisting of a mix of companies active in medical devices (SMV), data analytics (IVO) and data security (CVT). All are relatively young companies listed on the ASX.
- Additionally we have included Catapult Sports (CAT), which we believe is MEB's closest comparable, i.e. active in monitoring biometrics through wearables and providing analytics of the collected data.
- We have conducted a peer group valuation based on EV/Sales (figure 6) and EV/EBITDA (figure 7).

Peer group comprising SMV, IVO, CVT and CAT

**Figure 6: Peer group valuation based on EV/Sales (MEB annual revenue run rate 4Q17)**

	Share price	Market capitalisation	Enterprise Value	EV/Sales FY16	EV/Sales FY17
Simavita (SMV)	0.40	42	36	5.9	4.5
Invigor (IVO)	0.07	31	27	2.4	1.3
Covata (CVT)	0.22	110	106	9.1	3.5
Catapult Sports (CAT)	1.55	186	181	9.9	6.7
Average				6.8	4.0
Medibio	0.41	49	50	16.6	2.7
MEB target EV @ peer group EV/Sales multiple of			4.0		74.0
Net debt					0.7
Target market capitalisation					73.3
Implied 12 month target price (fully diluted)					0.61

Source: IRESS, Foster Stockbroking estimates

Peer group averages indicate price target of \$0.60

But CAT valuation signals > \$1.00 target price

- Interestingly, when using the peer group averages for FY17, i.e. 4.0x EV/Sales and 15.1x EV/EBITDA, both valuation metrics indicate a target price for MEB of around \$0.60 per share, based on MEB's annualized 4Q17 revenue run rate.
- However, using the FY17 valuation metrics of closest comparable Catapult Sports (CAT) yields an implied value in excess of \$1.00.

Figure 7: Peer group valuation based on EV/EBITDA FY17

	Share price	Market capitalisation	Enterprise Value	EV/EBITDA FY16	EV/EBITDA FY17
Simavita (SMV)	0.40	42	36	N/M	N/M
Invigor (IVO)	0.07	31	27	13.5	4.1
Covata (CVT)	0.22	110	106	N/M	9.9
Catapult Sports (CAT)	1.55	186	181	223.2	31.2
Average				N/M	15.1
Medibio	0.41	49	50	N/M	7.0
MEB target EV @ peer group EV/EBITDA multiple of			15.1		71.9
Net debt					0.7
Target market capitalisation					71.2
Implied 12 month target price (fully diluted)					0.59

Source: IRESS, Foster Stockbroking estimates

**CONCLUSION: SPECULATIVE BUY WITH AN INITIAL PRICE TARGET \$0.60**

- We start research coverage of MEB with a **Speculative Buy** and an **initial price target of \$0.60** per share based on the peer group valuation averages.

WITH UPSIDE TO > \$1.00 WHEN LARGE CONTRACTS ARE SIGNED

Signing a major medical services customer will be key trigger

- In our view, the upside for MEB can be substantially larger than \$0.60 per share if and when the company is able to sign large contracts, e.g. with large health care insurers and providers, thereby validating the business model. We expect this will trigger a rerating of the shares towards valuation levels seen for CAT, its closest comparable peer, implying potential to more than \$1.00 per share.
- **In other words, valuation levels around 7x EV/Sales and >30x EV/EBITDA are feasible for MEB, in our view, given the high growth potential, once the company has taken that big hurdle of signing its first major customer in the medical sector.**



APPENDICES

1: CAPITAL STRUCTURE

Figure 8: MEB capital structure (M) FY16

Ordinary shares	74
Escrowed shares	24
Options	22
Fully Diluted # shares	120
Cash & equivalents	3.0
Debt (current and non-current)	3.7
Net debt (cash)	0.7

Source: Company; Foster Stockbroking estimates

2: CASH POSITION

- MEB had \$3M in cash per the end of 1Q16 and anticipates a total of \$1.8M in R&D rebates related to FY15 to be received in 2Q16 and 3Q16.
- MEB has long term borrowings totalling \$3.5M, of which \$3.3M in the form of a three-year promissory note due April 2018 (8% interest rate), extendable by two years at a cost of an additional 2% interest.

3: BOARD OF DIRECTORS

- **Chris Indermaur (Chairman):** Mr. Indermaur has over 30 years of experience in large Australian companies in engineering, business development and commercial roles. He previously held the role of General Manager of Strategy and Development at Alinta Ltd. Mr. Indermaur holds a Bachelor of Engineering (Mechanical) and a Graduate Diploma of Engineering (Chemical) from the West Australian Institute of Technology (now Curtin University). He also holds a Bachelor of Laws and a Master of Laws from the Queensland University of Technology and a Graduate Diploma in Legal Practice from the Australian National University. Mr. Indermaur is currently Chairman of Poseidon Nickel Limited, a Non-Executive Director of Aerison Pty Ltd and was previously a Non-Executive Director of the Prime Health Group prior to its sale to Sonic Health Care.
- **Kris Knauer (Executive Director):** Mr. Knauer has a wealth of experience particularly in ASX Listed companies and is also a key shareholder and convertible noteholder of Medibio. He has been a consultant to the company and has been actively involved in the due diligence process and subsequently in providing corporate and strategic advice to Medibio. Mr. Knauer is focused on corporate matters, such as the board and senior management composition and structure, capital structure and the ongoing funding requirements for commercialisation of the company's CHR technology for the diagnosis of depression and other mental health conditions. Mr. Knauer has a Bachelor of Science (Honours) and has over 15 years' experience in finance and corporate advisory services. Mr. Knauer is a former Director of Esperance Minerals Limited (ASX: ESM), Non-Executive Chairman of Astro Resources NL (ASX: ARO), Non-Executive Director of Greenvale Mining NL (ASX: GRV) and Citadel Resource Group Limited (ASX: CGG) having resigned from all his other Directorships in 2015 to devote all of his focus to his role with Medibio.
- **Dr. James Campbell (Non-Executive Director):** Dr. Campbell is a senior biotechnology executive with more than 20 years of international experience in scientific research, management consulting and venture capital. Dr. Campbell has held research positions at the CNRS and the CSIRO. He was a founding executive at ChemGenex Pharmaceuticals where over nine years he assisted the growth of the company's market capitalization from \$10 million to the final \$230 million divestment in 2011. Dr. Campbell is a non-executive director of the ASX-listed



biotechnology companies Invion Limited (ASX: IVX), Patrys Limited (ASX: PAB) and Virax Holdings (ASX: VHL).

- **MEB is currently in the process to expand its board with several highly regarded sector specialists.**

4: TOP SHAREHOLDERS

Figure 9: Top 5 shareholders

Claude Solitario	12.8%
Stephen Addis	12.5%
Kris Knauer	6.6%
Carakho Holdings Pty. Ltd.	3.7%
Pitt Street Abs. Return Fund	3.1%

Source: IRESS

5: KEY RISKS

The following risks may negatively impact the MEB share price:

- **Technology Risk.** The fast pace of software development for IT may result in MEB's technology becoming outdated or less efficient compared to competitors' solutions.
- **Funding risk.** In developing and marketing its products, MEB may need to raise further funds. There is a risk this could be dilutive to shareholders or may be difficult to achieve.
- **Patent risk.** MEB has filed a number of patents. Any believed patent infringements may result in MEB needing to bring legal action. This could incur significant expense to the company. Also, there is a risk MEB may fail in its litigation defense.
- **Earnings risk.** MEB is in the early growth stages of a company lifecycle and there is a risk that profitable earnings may not eventuate as soon as the market expects.
- **Regulatory risk.** In case MEB does not receive FDA approval to commercialise its CHR technology in the United States, the company's earnings potential may be substantially limited.



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