

# BioProspect Limited (ASX: BPO)

**AGM Presentation November 2014**

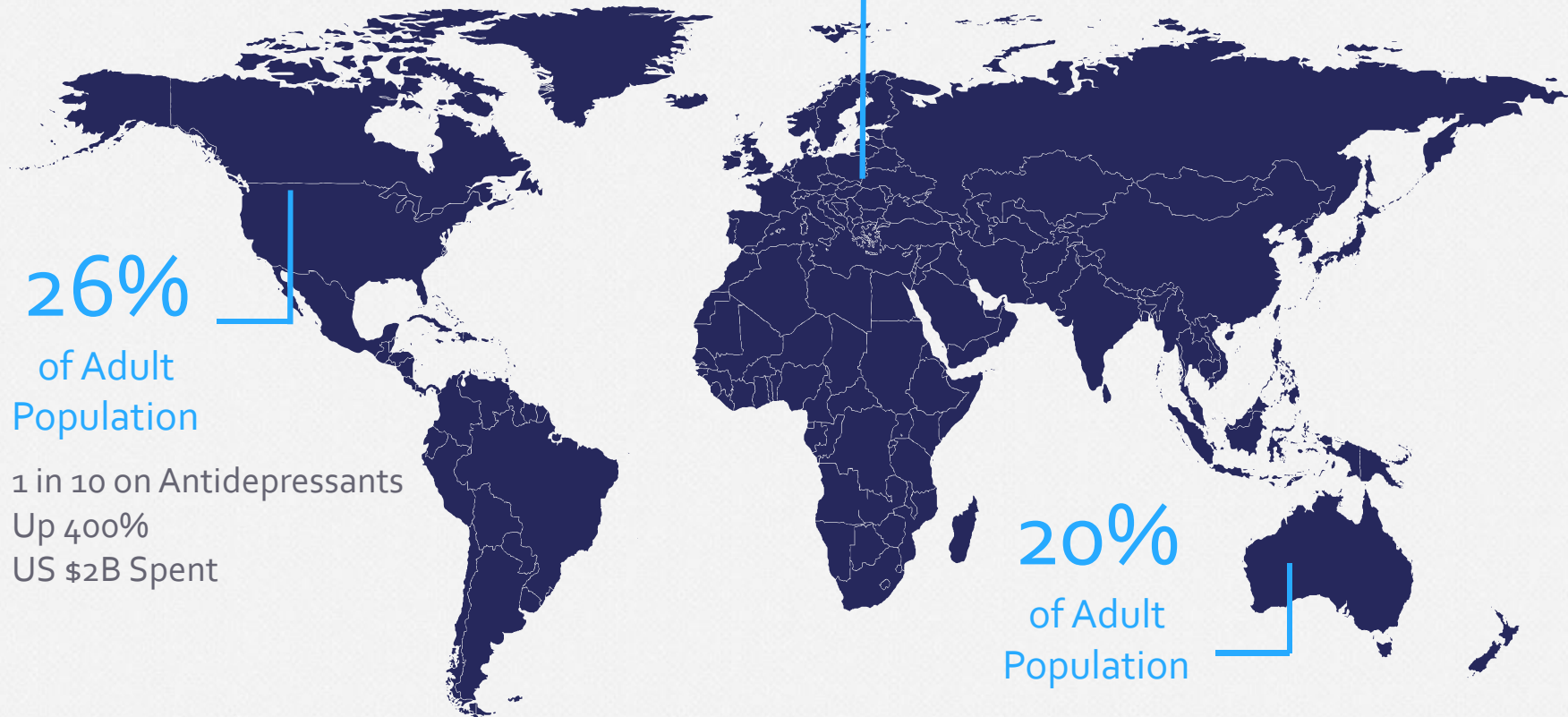
# Mental Health Industry

2

**350 Million Worldwide with Depression**  
**1 Suicide Every 40 Seconds**

**27%**  
of Adult  
Population

**1 Million Suicides  
Every Year**



**26%**  
of Adult  
Population

1 in 10 on Antidepressants  
Up 400%  
US \$2B Spent

**20%**  
of Adult  
Population

**Global Cost US\$2.5T** (2030 est. US\$6T) — Depression and Anxiety account for **+50%** of this burden

# Board and Management Team

## Board of Directors

- ” Chris Indermaur (Incoming Chairman)
- ” Vince Fayad (Chairman retiring)
- ” Dr James Campbell (Director)
- ” Kris Knauer (Director)

## Management

- ” Dr Michael Player (COO) Research Psychologist at Black Dog Institute
- ” Dr Matt Mesnik (CMO) US Based with 20 years Medical Executive experience
- ” Claude Solitario (Head Consumer Division) Invatec founder
- ” Stephen Stapelberg (Head Marketing)

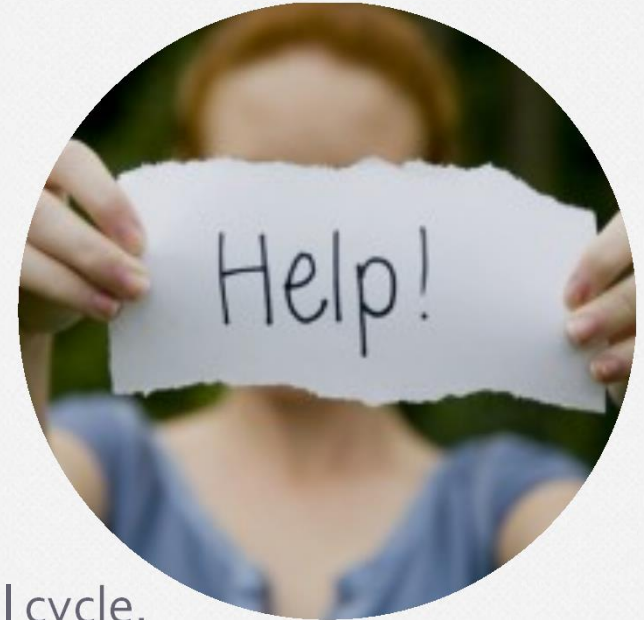
## Advisory Board

- ” Stephen Pearce (Chairman Lions Eye Institute and CFO Fortescue Metals)
- ” Dr Hans Stampfer (Inventor - Professor Psychiatry at UWA and Head Psychiatry Joondalup Teaching Hospital)
- ” Dr Stephen Addis – (Invatec founder and Head Psychiatry Fremantle Hospital)



# The Problem

- ✓ Currently no objective test for mental illness.
- ✓ Diagnosis based on the subjective judgement of the practitioner and the ability of the patient to articulate their problem.
- ✓ Patients often undergo a variety of tests to discount potential physical illness with a mental health disorder the final step.
- ✓ Hence diagnosis of mental illness is often late in the clinical cycle.
- ✓ Subjective approach may lead to inadequate or incorrect diagnosis, resulting in the potential for inappropriate or ineffective treatment.
- ✓ All the above places a huge cost burden on the healthcare system not to mention further stress on families and the workplace.
- ✓ “The need for screening for and early detection of depression in primary care services is unarguable” (World Federation for Mental Health)



## U.S. National Institute of Mental Health “May 2013”

“We will no longer endorse DSM5, as it has fundamental flaws and we are actively seeking a diagnostic system that is evidence based”

“It is critical to realise that we cannot succeed if we use DSM categories as the gold standard”

“We need a quantitative method for diagnosing depression”

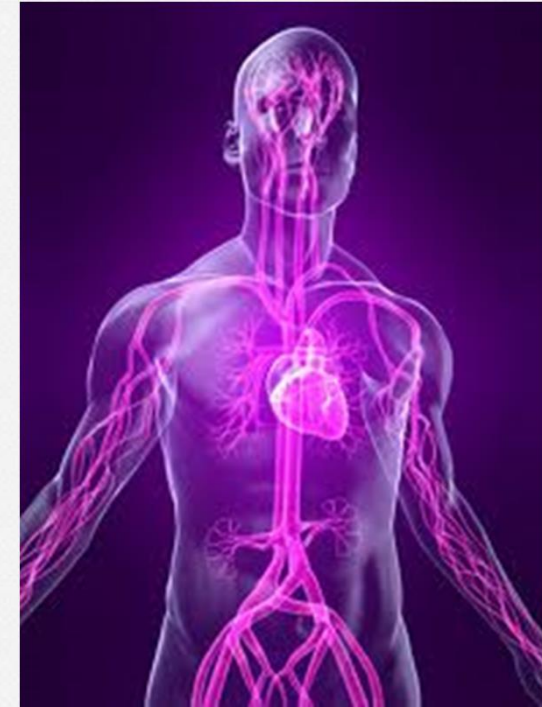
- ✓ Quantitative, evidence-based test
- ✓ Relies on biological data: analysis of heart rate data
- ✓ No input from the patient required
- ✓ Simple, safe and unobtrusive
- ✓ Measures clinical change
- ✓ Earlier diagnosis = earlier intervention = improved outcomes
- ✓ Improved monitoring = effective treatments
- ✓ Savings to the health system from earlier diagnosis





# The Hypothesis Behind the Research

- ✓ The body's Autonomic Nervous System (ANS) works to ensure appropriate reaction to internal and external influences.
- ✓ The ANS also maintains cardiovascular activity in its optimal range.
- ✓ It is well established that the ANS is influenced and affected by changes in mental state.
- ✓ Mental state-linked ANS disturbance is observed via the cardiovascular system, particularly during sleep when external influences are absent.
- ✓ Therefore the analysis of heart rate data represents a diagnostically significant methodology for assessing physiological dysfunction associated with psychiatric illness.

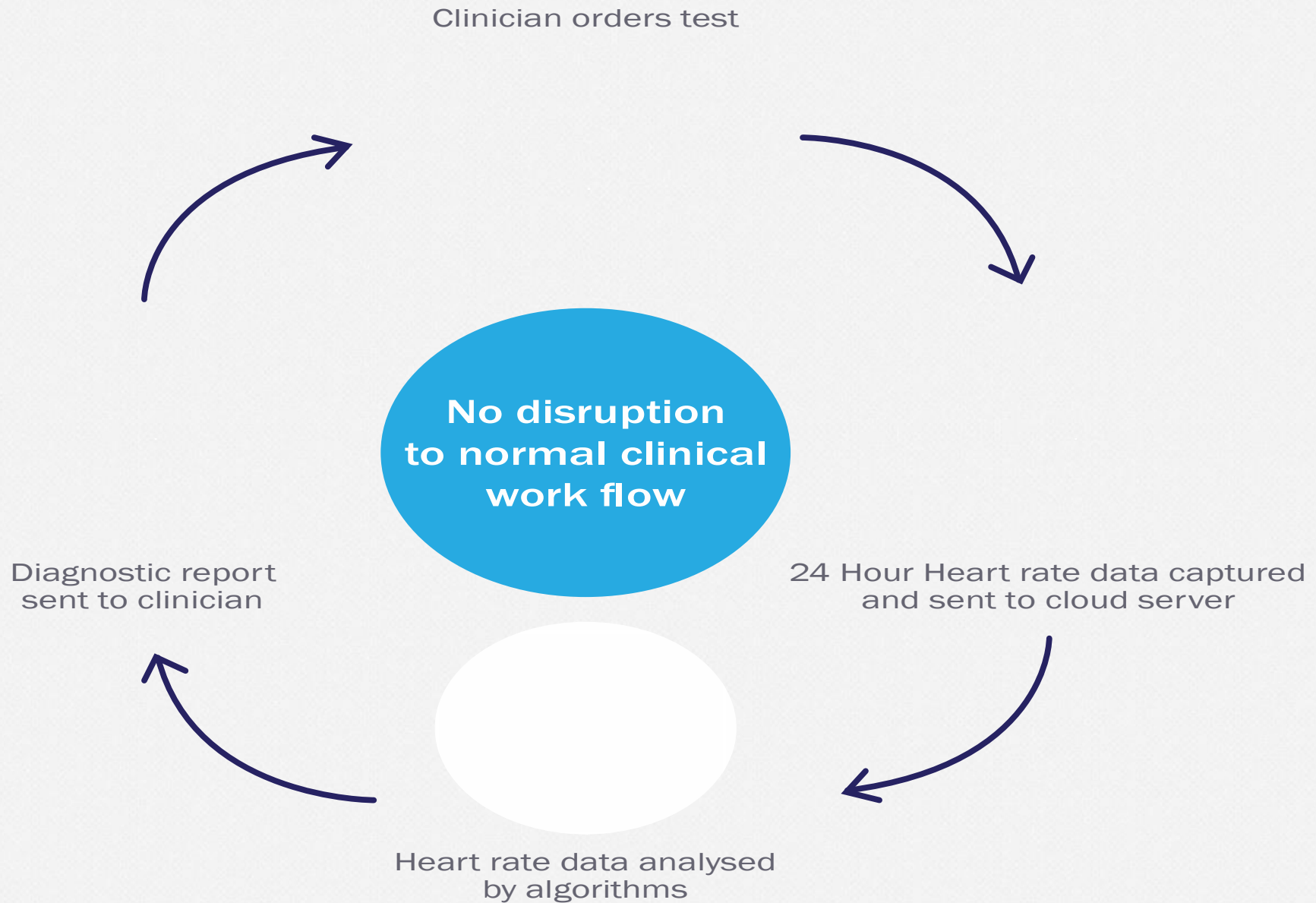


# Research Findings

- ✓ Based on over 10 years of research and +5000 subjects
- ✓ Different forms of mental illness such as 'anxiety' and 'depression' are associated with distinctly different patterns of heart rate
- ✓ Distinct 'markers' in heart rate data for depression and certain other mental illnesses have been identified
- ✓ Normal people (not attending GP/mental health professional) often show minor changes in CHR
- ✓ Patients have been followed up over time, which has clearly demonstrated that normalization occurs with clinical recovery. Where response to treatment does not occur the results remain abnormal.
- ✓ Also a tool for assessing the effectiveness of treatment



# How it Works



# First Independent Validation Trial

To be conducted by the UNSW in conjunction with the Black Dog Institute (BDI)

BDI is world-leader in the diagnosis, treatment and prevention of depression, bipolar disorder and suicide.

- over 150 research and clinical staff
- independent not-for-profit organisation
- focus on the rapid translation of mental health research into improved clinical practice

Principal researcher for the study will be Professor Gordon Parker

- one of the world's leading authorities on depression and bipolar disorder
- the founder of the Black Dog Institute and Officer of the Order of Australia

Study designed to demonstrate that BPO's Circadian Heart Rate Technology can provide the first objective diagnostic tool to distinguish melancholic and non-melancholic depression

# Background on the Study – A Major Breakthrough

Two key scientific views on Depression with the debate raging in academic circles

1. Depression has traditionally been viewed as a single entity
  - Conditions differentiated by severity and duration.
  - Melancholic Depression is a type of MDD (Major Depressive Disorder)
2. There are two hypothesised categories of Depression
  - A condition with greater biological determinants – (Melancholic Depression) caused by genetic and other biological factors
  - A condition less reliant on biological factors – (Non Melancholic Depression) reflecting the contribution of life event stressors and personality style

A positive finding would support views there are two distinct types of depression



A positive outcome in the study would make a significant impact on the treatment of depression and improved patient outcomes

Melancholic Depression - responds best to biological treatments

- ECT (Electro Convulsive Therapy)
- Antidepressant medications

Non Melancholic Depression – influenced more by psychosocial factors

- ~ 50% of cases do not respond to antidepressants. Medications do not change the precipitating event/stress, nor the inwards coping style, but may lessen the symptoms
- Psychotherapy provides the best treatment option
- High rate of spontaneous remission, hence accurate assessment of symptomology and treatment response can be difficult

# Target Markets

13

Medical



- ✓ Primary Care Physicians
- ✓ Psychiatrists
- ✓ Psychologists
- ✓ Therapists
- ✓ Counsellors

Corporate



- ✓ High Risk Occupations
- ✓ Insurance Companies
- ✓ Corporate Screening
- ✓ Professions
- ✓ Elite Sports



Consumer



- ✓ Direct to Consumer



Pay per report/Licensing arrangements



# Early Revenue Opportunity (Pre-validation)

14

Consumer App  
(Chronic Stress)





# E-Health Consumer Market

15

500 million smartphone owners using a healthcare app

1.7 Billion by 2018<sup>1</sup>

52% interested in buying wearable devices that measure their health<sup>2</sup>

Apple/Mayo Clinic partnership with IOS8. The Goal? iPhone/Apple Watch that make you healthier!

Other stress apps on the market have achieved 25 million downloads and we are confident our offering is superior

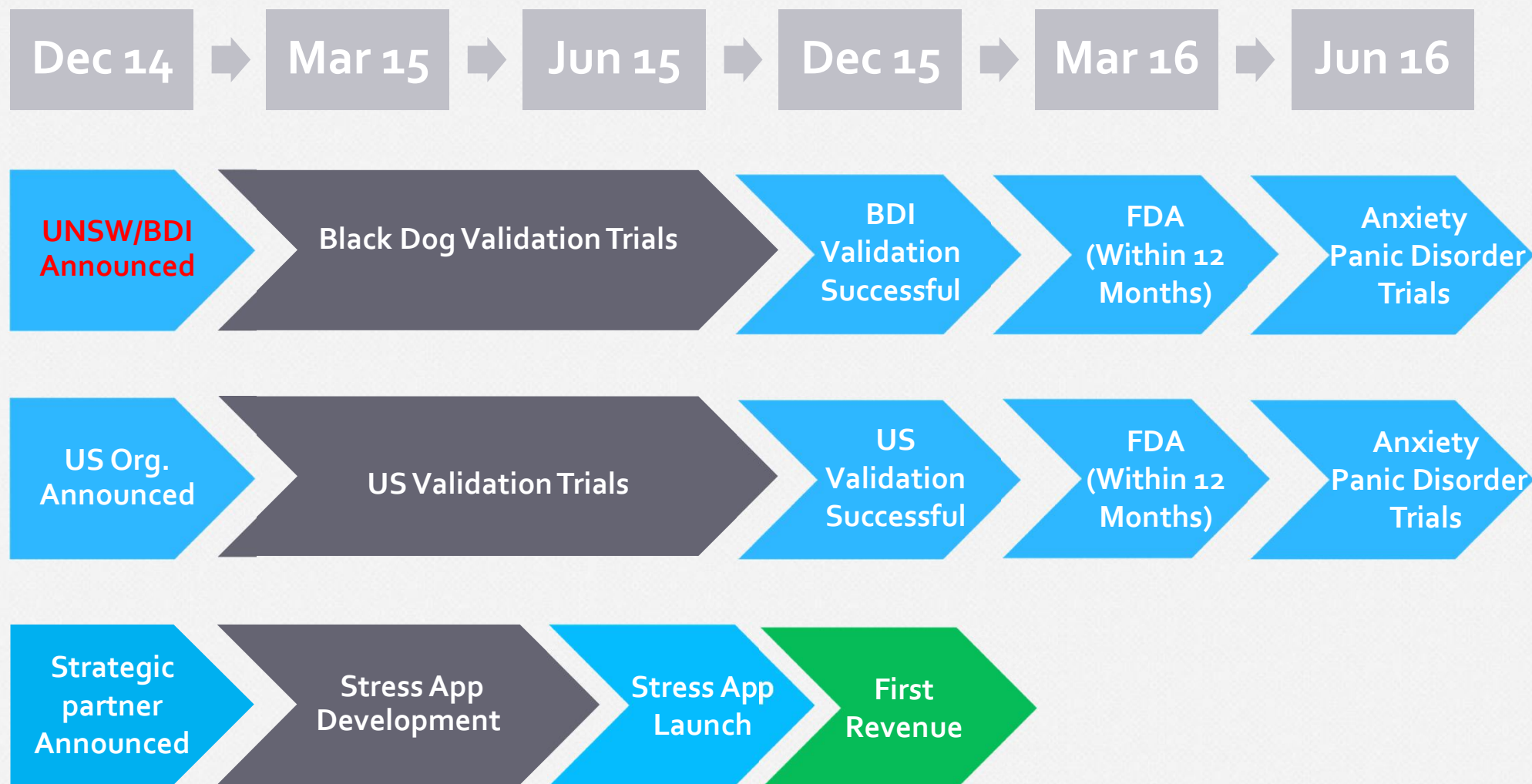
*8,500 downloads achieves break even on the **my**bettermind capital costs*



1. Source – Technology News.com.au
2. Accenture Digital Consumer Tech Survey 2014

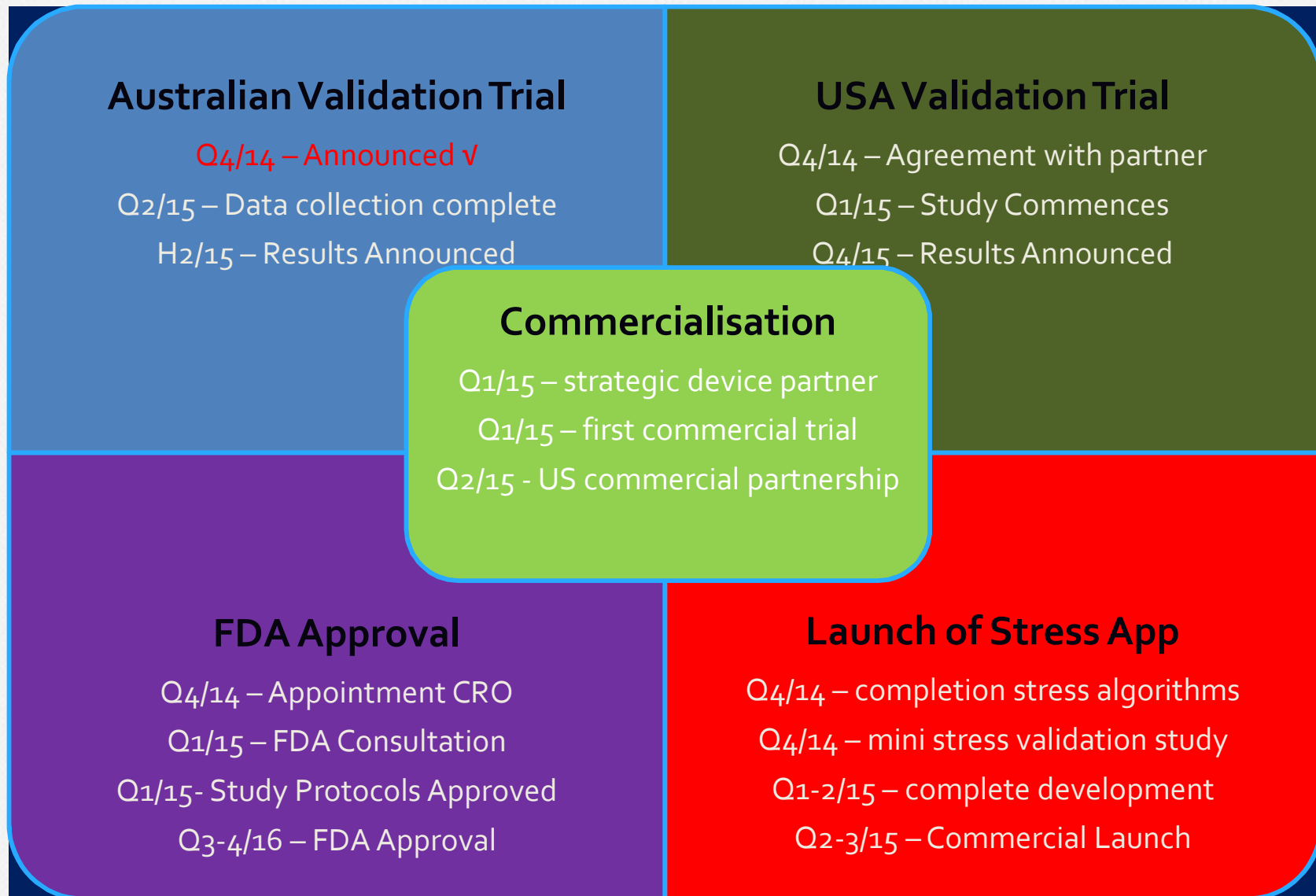
# Timeline to Commercialisation

16



# Key Company Milestones

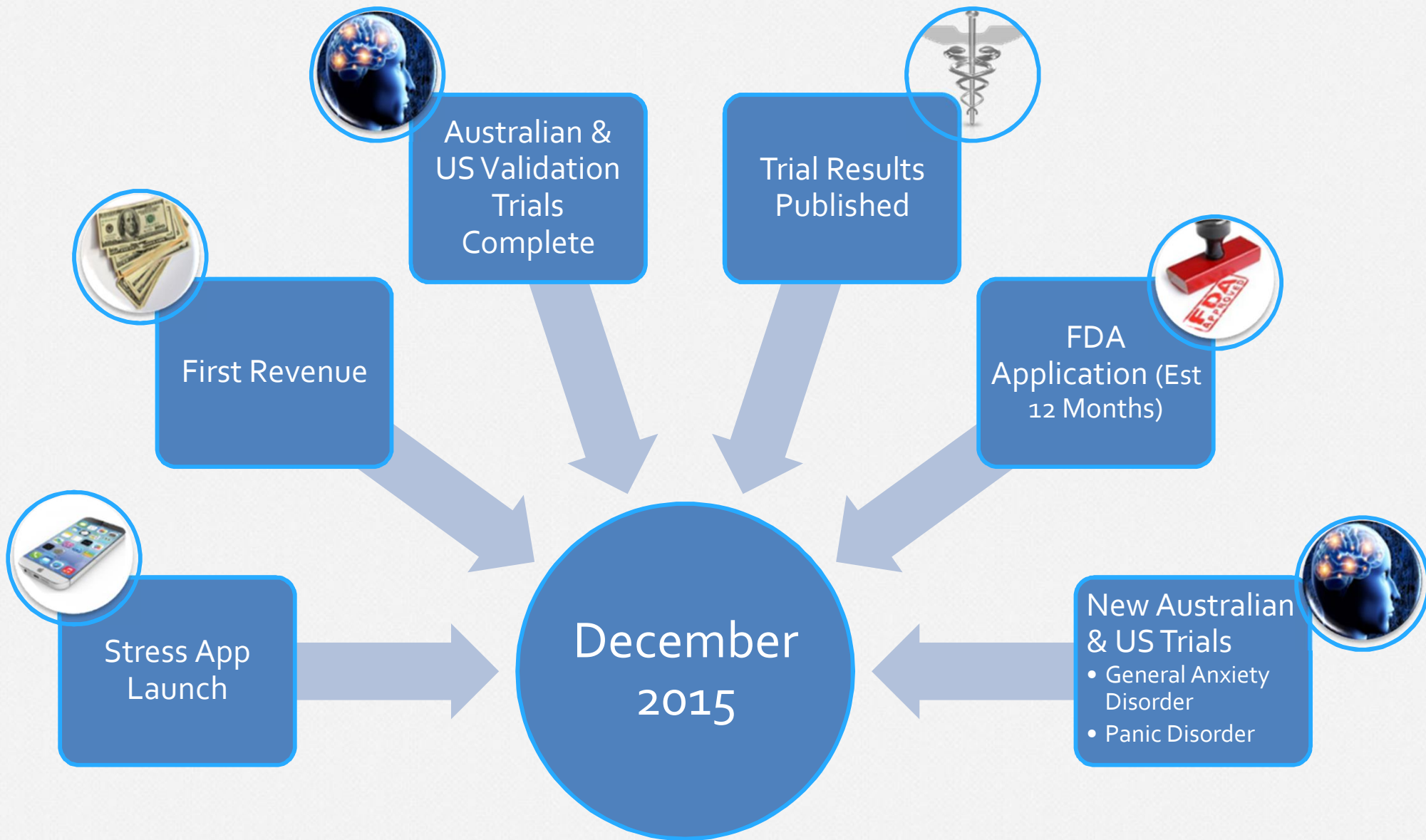
17





# The Company in 12 months - December 2015

18



- ✓ **Ground-breaking quantitative test for mental illness**
  - Based on analysis of circadian heart data
  - No cost effective competing technologies
  - Protected by patents and know how
  - No existing FDA approved quantitative test
- ✓ **Multiple global market sectors – all large**
  - Depression diagnostic alone is a \$16 billion revenue opportunity
- ✓ **Supported by over 10 years of research**
- ✓ **Validation trials to commence in 4Q 2014 in both:**
  - U.S.A
  - Australia
- ✓ **Early revenue opportunity—chronic stress app (pre-validation)**

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# Appendix 1 - Capital Structure

	Existing Capital Structure	Post 100:1 Consolidation	
		Shares	Options
Existing shareholders	3,506,522,703	35,065,227	–
Existing Convertible Notes	30 series "A" x \$50,000 @ 0.1¢ 40 series "B" x \$25,000 @ 0.3¢	15,000,000 3,333,333	15,000,000
\$2.5 million Capital Raising		8,333,333	–
Invatec Vendors		25,500,000	4,000,000
<b>TOTAL ON ISSUE AT COMPLETION</b>		<b>87.2 million</b>	<b>19.0 million</b>
Heartlink Patents		10,346,803	
Vendor Milestone 1	(VALIDATION)	6,000,000	
Vendor Milestone 2	(ALGORITHM)	6,000,000	
Vendor Milestone 3	(FDA/TGA)	6,000,000	
<b>ALL MILESTONES ACHIEVED</b>		<b>115.6 million</b>	<b>19.0 million</b>

# Appendix 2 – US Revenue Potential (Depression)

*"Appears the existing CPT & ICD9 codes for cardiac rhythm monitoring devices may be leveraged"*

	Medicare	Private	Insurance	Assumption
93225	Recoding (PCP)	\$26.87	\$40	
93226	Analysis with Report (BPO)	\$37.97	\$57	\$45
93227	Physician review & Interpretation (PCP)	\$26.87	\$40	

- 1. Untreated market (initial diagnosis)**
  - 3.5% population @ \$45 per report to BPO
  - US\$507m revenue opportunity
- 2. Treated market (ongoing monitoring)**
  - 3.5% population @ US\$22.50 per report – quarterly monitoring
  - US\$1014m revenue opportunity

*"Given the capital expense of the equipment, proprietary software algorithms, and the work associated with the testing, the current payment levels should be sufficient for clinician adoption"*