



OVENTUS: UNMASKING THE OSA MARKET OPPORTUNITY

May 2019



About Oventus

Oventus is an Australian medical device company with a proprietary technology for the treatment of *obstructive sleep apnea (OSA)*. Our focus is on treating those patients that are not being, or cannot be treated effectively with existing treatment modalities.

OSA is a massive, multibillion dollar and fast growing market

There is a huge unmet need many times the size of the existing market due to the abandonment of existing treatments by the majority of patients

Oventus has a clinically proven ability to deliver superior outcomes for more than 80% of these patients with the first products in its treatment platform currently launching in the US with FDA clearance and existing reimbursement codes

Platform technology developed and company founded in 2013 by CEO, Dr Chris Hart B.Sc. B.D.Sc (Hons) M.Phil (Cantab), Oventus is listed on the Australian Securities Exchange (ASX:OVN)



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Obstructive Sleep Apnea (OSA)

What is Sleep Apnea?

How is it treated today?

What is the market size?

What could it be with Oventus in market?

What is OSA?

- Obstructive sleep apnea (OSA) is the most common type of 'sleep apnea'
- OSA is the absence of breathing that occurs during sleep that results in disruptive sleep that compromises daytime functions leading to excessive sleepiness, memory impairment, depression and a host of co-morbidities, ie. Hypertension, heart disease, stroke and diabetes etc.
- Occurs when there is obstruction or collapse of the nose, soft palate and lateral walls of the airway.



**Key Indicator:
Snoring**

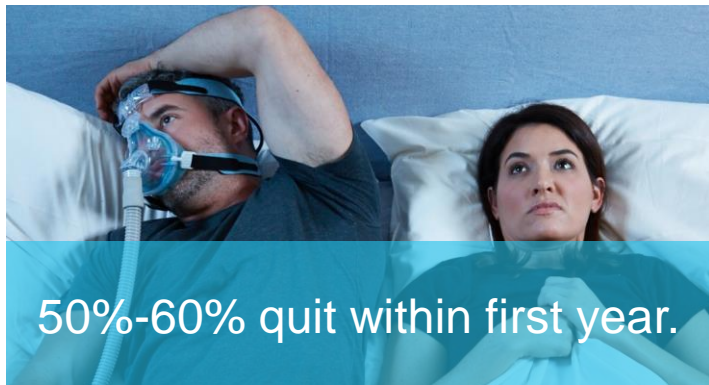


**Risk Factor for
Chronic Disease**



**Cost Burden 149.6 B
6,033 per person per
year undiagnosed**

Commonly reported limitations of current standard of care – Continuous Positive Air Pressure (CPAP)



50%-60% quit within first year.



Discomfort due to mask and straps: facial abrasion, strap marks, claustrophobia and general discomfort



Pressure intolerance and device noise.

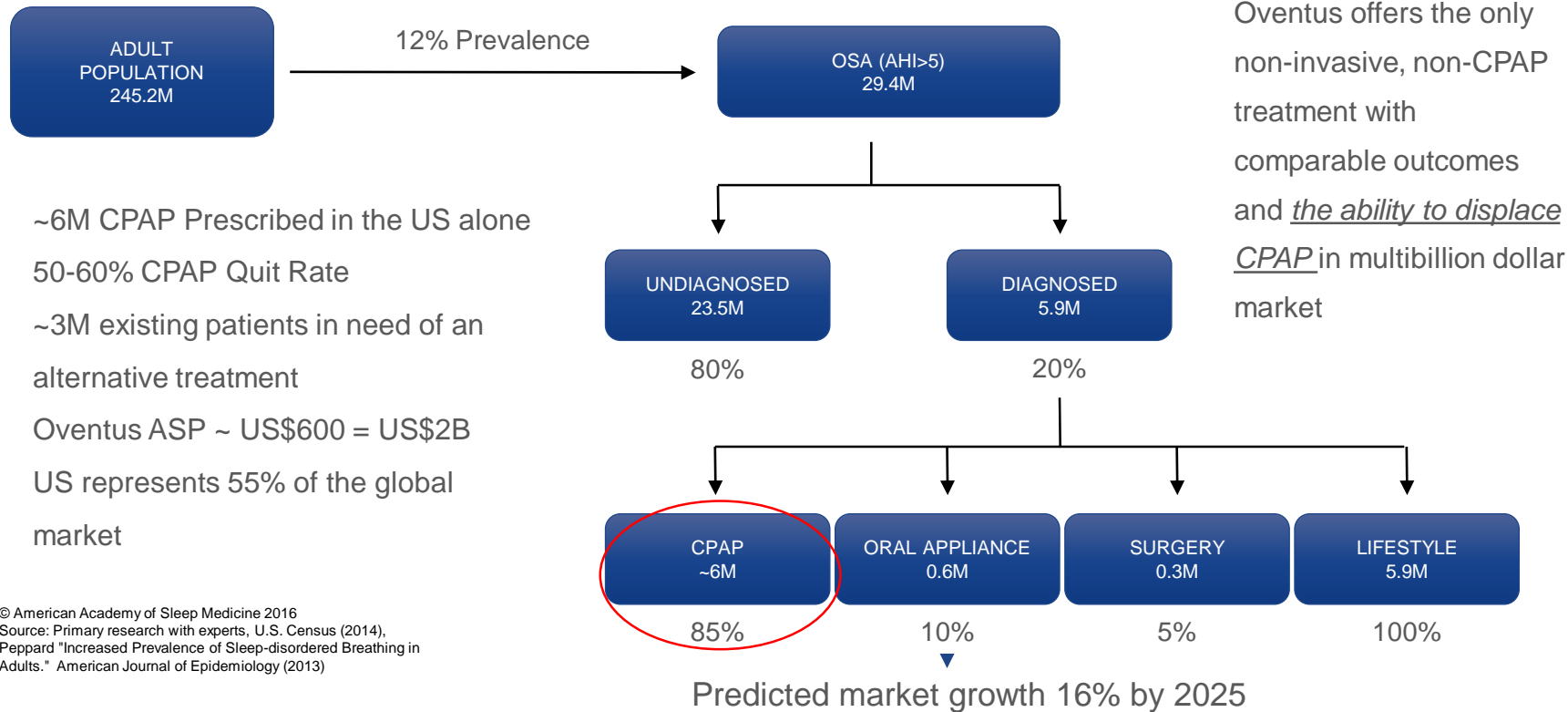


Limits freedom of movement with the power cords and mask hose.



Cleaning, maintenance and resupply.

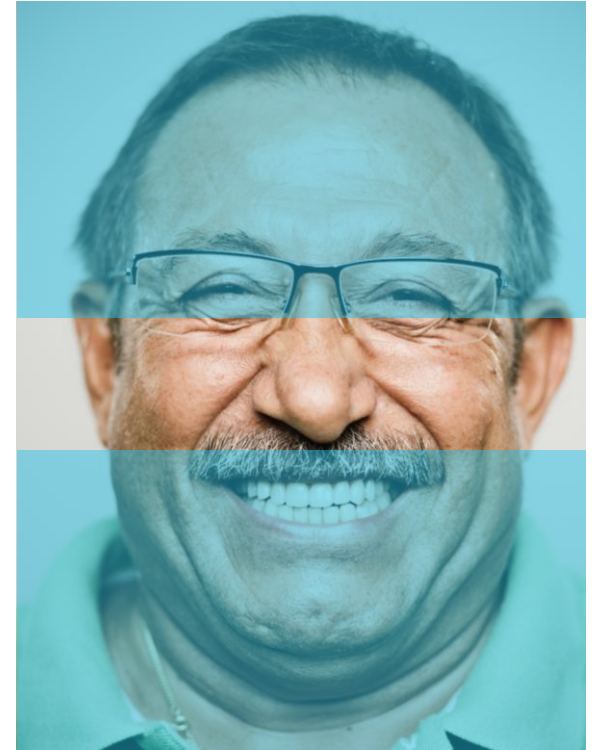
US epidemiology/prevalence – US\$2B opportunity for Oventus



Under-reported: role of the nose in CPAP intolerance

“The importance of the nose to successful use of CPAP cannot be overstated.” – Dr. Jerrold A. Kram, MD, FCCP, FAASM

- The increase in nasal airway resistance can lead to mouth breathing.¹ Mouth breathing leads to CPAP intolerance.
- Examples of Nasal Obstruction (79% self-reported):
 - Allergies
 - Congestion
 - Deviated septum
 - Anatomical features



¹ McNicholas WT. The nose and OSA: variable nasal obstruction may be more important in pathophysiology than fixed obstruction. *Eur Respir J.* 2008 Jul;32(1):3-8.

O₂Vent[®] Airway Technology - Allowing air to flow to where its needed instead of pumping it in through a hose and mask

A new modality bridging the gap between CPAP & standard oral appliance therapy by making oral appliances more efficacious and CPAP more tolerable

1. Air goes in through the airway on inhalation and out through the airway on exhalation.
Acts like a “second nose”



2. Air in on inhalation delivered to throat, air out on exhalation

3. The device brings the lower jaw forward, making more room for air to go into the patient's lungs



Over 170 patients studied across four clinical studies

Clinical data presented so far shows that:

- Patients with nasal obstruction who would normally struggle with treatment displayed a clinically and statistically significant benefit owing to Oventus' O₂Vent[®] airway technology ($p < 0.05$)
- Patients that had failed prior lines of therapy were shown to have benefit from Oventus airway technology
 - 20% decrease in residual events ($p < 0.05$)
 - 20% increase in success rate
 - 40% increase in response rate
- Addition of the Oventus PEEP (positive end expiratory pressure) valve technology to the O₂Vent[®] airway delivered a
 - 30% ($p < 0.01$) increase in efficacy for ExVent[™] and
 - 50% ($P < 0.01$) increase in efficacy for ONEPAP
- Oventus airway technology improved treatment outcomes for CPAP users by reducing pressure requirements by 40-50% ($p < 0.001$) and eliminating the need for full face masks



Clinical results lead to value-driving product innovation

During 2018, clinical work undertaken through the Federal Government-funded CRC-P, 'NeuRA trial' led to three significant discoveries in the area of sleep medicine:

1. The ExVent™ valve – inserting this valve into the 'duck bill' of Oventus' O₂Vent® device improves efficacy for those patients who need more intervention
2. The O₂Vent® ONEPAP™ valve – clips into the 'duck bill' of Oventus' O₂Vent® device and acts as a mini CPAP valve without the need for cords or power
3. The O₂Vent® Connect™ CPAP connection will connect the Oventus O₂Vent® device to CPAP, enabling CPAP to be delivered at lower pressures, without the need for a full face mask

These unexpected product discoveries, Oventus' ExVent™ valve, OnePAP and O₂Vent® Connect, represent the most significant improvements in sleep medicine in over several decades.

Oventus personalised Sleep Treatment Platform

..set to deliver treatment to **all types** of OSA patients,
potentially displacing the need for CPAP

O₂Vent™



O₂Vent®
In Market

O₂Vent
Optima™



O₂Vent® Optima
Launch Q1CY19

O₂Vent™
+ ExVent™
Oral EPAP



ExVent™ valve
Expected to be released
Q2CY19

O₂Vent™
+ ONEPAP™
Oral/nasal
EPAP



O₂Vent®
ONEPAP™
In development

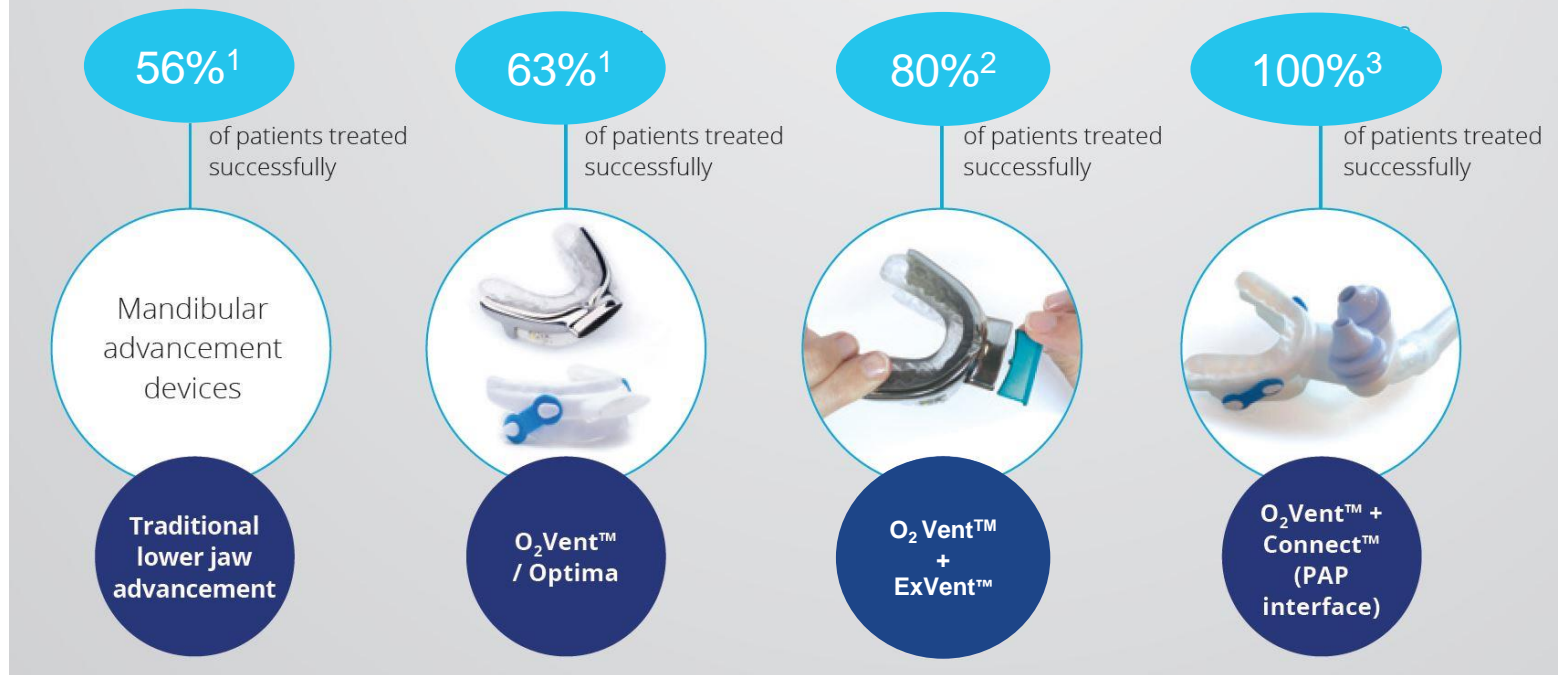
O₂Vent
Connect™
CPAP
connection



O₂Vent®
Connect™
In development

Outstanding clinical success reported in a variety of forums

CUMULATIVE SUCCESS RATES WITH OVENTUS AIRWAY TECHNOLOGY*

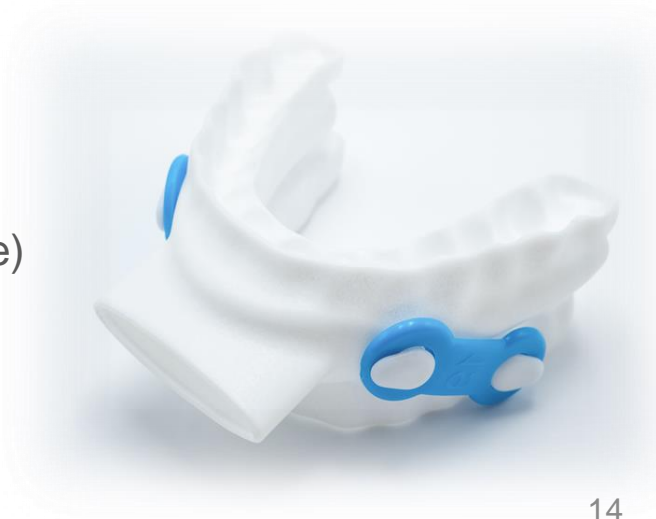


*AHI Reduction to less than 10 events per hour

¹ McCloy K, Lavery D, Moldavtsev J, Airway open-airway closed: The effect of mandibular advancement therapy for obstructive sleep apnoea with and without a novel in-built airway. Abstract Submitted ASA Brisbane 2018. ² Lai V, Tong B, Tran C, Ricciardiello A, Donegan M, Murray N, Carberry J and Eckert D, Combination therapy with mandibular advancement and expiratory positive airway pressure valves reduces OSA severity. Abstract Submitted ASA Brisbane 2018. ³ Tong B, Tran C, Ricciardiello A, Donegan M, Murray N, Chiang A, Szollosi I, Amatoury A and Eckert D. Combination therapy with CPAP plus MAS reduces CPAP therapeutic requirements in incomplete MAS responders. Abstract submitted ASA Brisbane 2018.

O₂Vent[®] Optima Launch

- Optima is the new lightweight, nylon version of the O₂Vent[®] oral device
- Easier to manufacture and has a lower cost of goods
- Successful controlled market release occurred in Australia and Canada during December and January 2018
- Hard launch in Australia during January 2019 in conjunction with a [national media campaign](#)
- Launched in Canada during February 2019
- Early feedback has been exceptional
- US launch mid year 2019 (subject to FDA Clearance)



O2Vent® Optima



A Controlled Market Release* completed in February 2019 showed that:



89% of patients found O2Vent® Optima easy to clean and maintain at home.



94% of patients indicated they would continue using their O2Vent® Optima device (based on fit, comfort and treating their OSA).



72% of patients feel confident or very confident in their ability to use O2Vent® Optima on a regular basis. Self-efficacy is crucial for treatment success.



80% or 8/10 patients chose O2Vent® Optima over their current oral appliance.

77% of patients achieved a reduced Epworth Sleepiness Scale score after using O2Vent® Optima.

* (n=22)

US Medical Technology Advisory Board



Dr. Lee A. Surkin, MD, FAASM
Chief Medical Officer of N3Sleep



Dr. Richard K. Bogan, MD, FCCP, FAASM
Associate Clinical Professor at the University of South Carolina School of Medicine in Columbia, SC and Medical University of SC in Charleston, SC



Jerrold A. Kram, MD, FCCP, FAASM
Medical Director of the California Centre for Sleep Disorders



Dr. Mark A. Rasmus, MD, FAASM
Medical Director, Idaho Sleep Health



Daniel B. Brown, Esq.
Partner, Healthcare and Corporate Practice Groups, Taylor English Duma LLP Atlanta, Georgia



Myra G. Brown
President, MbrownGroup LLC



Dr. Mark Hickey, MD, FAASM
Founder, Colorado Sleep Institute

US Oventus Team



Robin Randolph

VP Sales and Marketing, North America

Marketing & Sales executive 30+ years Sleep Industry. In-depth North America medical device commercialization experience. Former Dir. Sleep Initiatives and National Accounts- ResMed, Manager- Fisher & Paykel Healthcare NA Marketing



Masoud Vahidi

VP Operations, North America

15+ years leadership experience in upstream and downstream marketing of medical devices in sleep apnea, COPD, and dental Restoratives products. Former Sr. Marketing Manager – KaVo Kerr



Phillip Miller

Leader Information Technology

Proven leadership 20+ years information technology systems and services across a range of industries and markets. Former VP Data & Communications - ResMed



Robyn Woidtke, MSN-Ed, RN, BSHS, R.PSGT

Director of Regulatory and Clinical Affairs With a sleep medicine career spanning 30 years and extensive experience in the medical device industry. Former Director of Clinical Affairs - ResMed



Peggy Powers

Manager Clinical Education

20+ years clinical educator and authority in the sleep & respiratory industry. Registered Respiratory Therapist. Former Manager Clinical Education – ResMed, former Clinical Educator – Fisher & Paykel Healthcare



Brian Ueda

Marketing Operations Manager

10+ years marketing career with extensive marketing operations and digital marketing experience in the medical device industry. Former Digital Marketing Manager – Fisher & Paykel Healthcare



Linda Appiah-Dimanche

Customer Care Coordinator

10+ years growing and implementing customer service teams while providing outstanding customer experience.

US Commercial Strategy Consists of Four Sales Channels

1. Create hybrid ecosystem of dental/sleep practices

Partnering with largest sleep providers in the US. Implementing collaborative clinical models & product distribution

Dentists work under sleep physicians so more revenues and improved gross margins generated for providers and Oventus

2. Dental Organizations

Partnering with major dental/medical distributors who are aligned with a number of Dental Networks

3. Direct To Consumer

App launched to funnel failed and struggling CPAP patients to sleep and dental partners. Launched Q2 CY2019

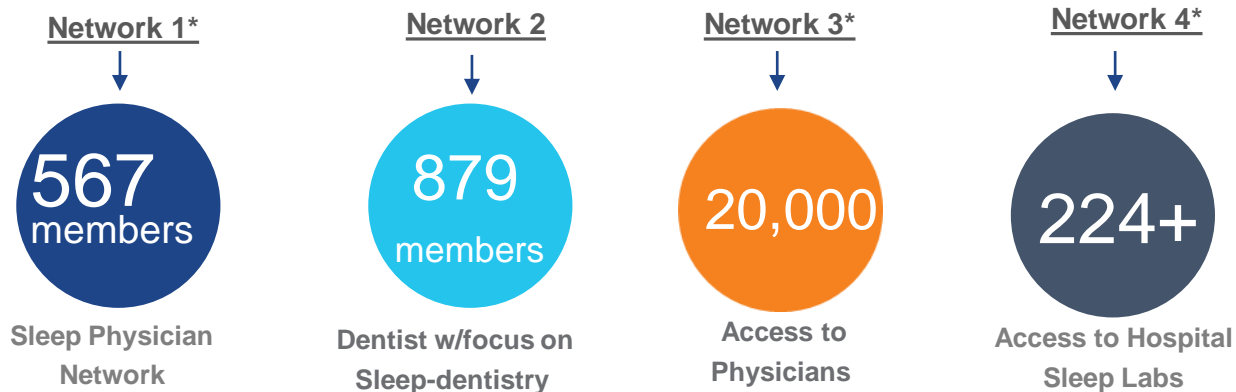
4. Veterans Administration

Identified major distributor with Federal Supply Schedule





Partnering With Major US Sleep Networks for Launch of O₂Vent[®] Optima*

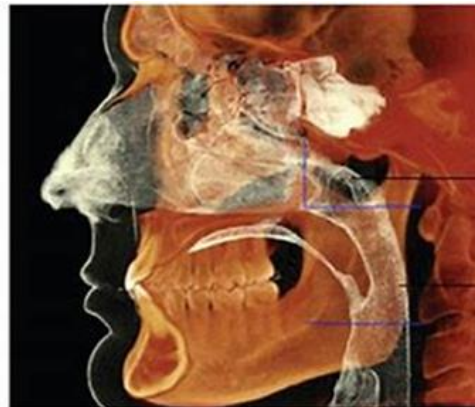


**Subject to 510k clearance - expected mid CY2019*

Introducing Oventus' "Lab in Lab" model: launching Q3CY2019

Designed specifically for sleep groups

The Dental Sleep "Lab in Lab" program is comprehensive and assists sleep groups in maximising patient outcomes by providing the systems, support, training and resources required to run a professional Dental Sleep Medicine clinic utilising Oventus' proprietary airway technology and digital workflow





Lab-in-Lab Model

Bringing dentists and sleep physicians together, improving patient outcomes and creating value for all stakeholders

- Dentists often attempt to manage OSA in their clinics
- Some device companies have historically competed with both dentists and sleep physicians instead of enabling them
- Sleep physicians have been frustrated by this
- Oventus' solution is to enable dentists and sleep physicians to work collaboratively to manage OSA utilising existing infrastructure and Oventus' digital workflow
- This “lab-in-lab” model can improve clinical outcomes for patients and increase revenue and profit for all stakeholders thus driving adoption
- Oventus' treatment platform and digital workflow is unique in its ability to facilitate this level of collaboration
- Patients will be able to access these collaborations online through AwakeXpress.com

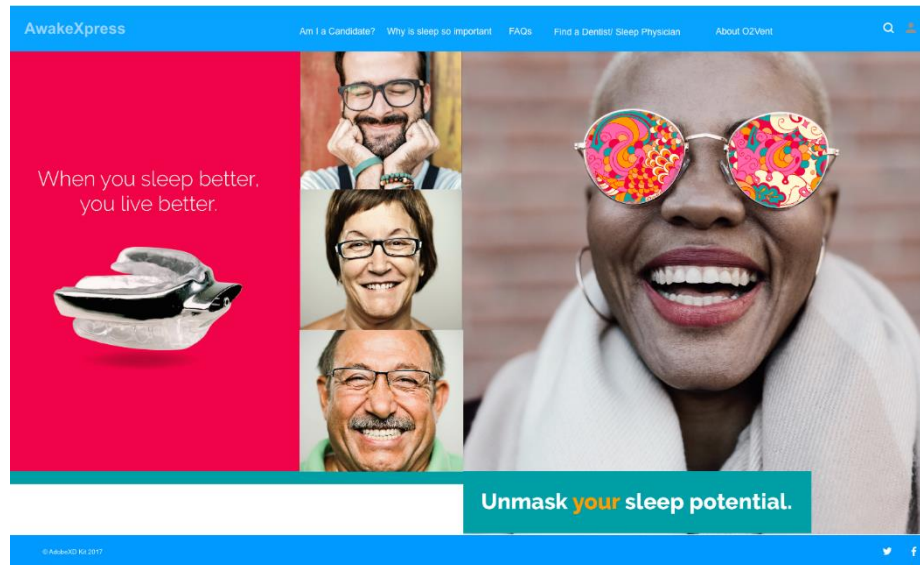
US DTC campaign launched May 2019 via AwakeXpress.com

Through AwakeXpress website, we're reaching out directly to failed and struggling CPAP users to educate them on a new alternative to treatment.

The intolerance to CPAP is not their fault and may be related to several common factors underscored by under-reported nasal conditions.

Site features:

- Provider locator map in all markets where O₂Vent[®] is available (Australia and North America)
- Appointment scheduling
- Vouchers and promotions





How does AwakeXpress help patients manage their OSA?

Through AwakeXpress.com patients can manage their OSA journey

- Patients can learn why an O₂Vent[®] might be the solution they are looking for and need
- They will then be guided through one of three pathways
 - They have been diagnosed and are not using CPAP – Dental
 - They have been diagnosed but would like a second treatment option
 - They have not been diagnosed – Sleep
- The appropriate referral can then be made online and the patient supported through their patient journey towards optimal treatment



Market and outlook

- Current device market for the treatment of OSA is US\$4.4B of which 10% are oral appliances
- Total device market forecast to grow at 7.5% CAGR (historical growth rates of 15-20% CAGR)
- **Oral appliance segment forecast to grow at 25% CAGR**
- Oral appliance growing acceptance by healthcare providers as an alternative treatment
- 80% of patients yet to be offered treatment

Sleep Apnea Diagnostic & Therapeutic Devices Market, Markets and Markets, Table 98. China data – Anti-snoring Devices and Snoring Surgery Market: 2016-2024
<https://www.marketsandmarkets.com/Market-Reports/sleep-apnea-devices-market-719.html>



Investment thesis

- Oventus technology is clinically validated as the most effective oral appliance with treatment outcomes comparable to CPAP.
- AwakeXpress.com and the lab in lab business model are set to accelerate adoption of Oventus Airway Technology and sales revenue in the second half of calendar 2019
- With the launch of the lab in lab model a 10% conversion rate of the 500,000 patients taking a sleep test each year in just two national US accounts would convert to revenue of US\$25M
- With the launch of AwakeXpress.com, “CPAP Rescue” campaigns and additional national accounts revenue growth could be far greater
- Early feedback from sleep channel stakeholders indicates that this is achievable due to the improved clinical outcomes of Oventus Airway Technology and Oventus’ collaborative approach to market

Sleep Apnea Diagnostic & Therapeutic Devices Market, Markets and Markets, Table 98. China data – Anti-snoring Devices and Snoring Surgery Market: 2016-2024
<https://www.marketsandmarkets.com/Market-Reports/sleep-apnea-devices-market-719.html>

Intellectual Property

Airway design

Airway Platform

AU2012255625
EP2709572
US10010444
US16/003,558

3D printing technology

Design and additive manufacturing

AU2015240431
AU2017228641
CA2944525
CN2015800269491
EP15773894.9
JP2016-560790
KR10-2016-7028505
US15/300865

For people with jaw pain

Breathing Assist Device with Tongue Retaining Device

AU2016303791
CA2994175
CN2016800575152
EP16831973.9
JP2018-505470
NZ739363
US15/750023

Jaw positioning adjustment

Titratable design with an airway – allows lower jaw adjustment by the patient

AU2017243874
CA3016209
CN201780022113.3
CN206880919
CN201721839219.6
EP17772876.3
JP2018-545631
KR10-2018-7026715
NZ745767
US16/089084

CPAP connector

PAP connectors to the Oventus airway

PCT/AU2017/051092
CA3039830
JP2019-518265
KR10-2019-7012830
US15/300865

Compliance and airflow sensors

Compliance and airflow sensors

PCT/AU2017/051316

Valve Arrangement

Provisional applications for valve arrangements for airflow control

PCT/AU2019/050223

Integrated airway and bite

Provisional application for an integrated device

PCT/AU2019/050402
AU2018903930



Multiple domain names registered



Trademarks advancing according to Madrid protocol

Board of Directors and Management



Dr Mel Bridges
Non-executive Chairman

Extensive experience as an Executive and Company Director in healthcare, agricultural technology, drug development, pathology, diagnostics and medical devices.

Has successfully raised in excess of \$300M investment capital in the healthcare/biotech sector and been directly involved in over \$1B in merger and acquisition and related transactions.



Ms Sue MacLeman
Non-executive Director

Very broad commercial experience in multiple companies – currently Chair of the Medical Technology and Pharmaceutical Industry Innovation Growth Centre.

Underpinned by graduate qualifications in pharmacy and post graduate qualifications in corporate governance, commercial law, business administration and marketing.



Sharad Joshi
Non-Executive Director

Boston based. Active in the medical technology industry for over 30 years, held senior positions for the past 10 years including global entrepreneurial medical devices CEO with experience in launching medical devices.

Holds qualifications in mechanical engineering in the biomedical space and also holds an MBA



Dr Chris Hart
**Managing Director &
Chief Executive Officer**

Experienced dentist with extensive business experience.

Heads up clinician engagement for the delivery of the Oventus appliances. Inventor of the core design.



Mr Neil Anderson
Chief Technology Officer

Experienced CEO, project manager, materials scientist and entrepreneur. In-depth skills and knowledge of medical device commercialisation – in the field for over 30 years.

Has managed the R&D, manufacturing process and regulatory.



Mr Steve Denaro
Company Secretary

Experienced Company Secretary and Chief Financial Officer of various public companies and with major chartered accountancy firms in Australia and the UK.

Bachelor of Business in Accountancy, Graduate Diploma in Applied Corporate Governance and is a member of the Institute of Chartered Accountants in Australia & New Zealand.



Finances

Details

Cash on hand 31 March 2019	\$5,100,000
Revenue FYTD2019 (Up to 31 March 2019)	\$241,000

Capital Structure

Details

Shares on Issue	105.9 m
Options	4.45 m
Price (3 May 2019)	\$0.25
Market Cap (3 May 2019)	\$26 m

Shareholders

Dr Chris Hart	25%
Other founders	11%
Other top 20 shareholders	30%
Remaining 985 shareholders	34%



Oventus Airway Technology – O₂Vent[®] Optima

This is what our patients say about comfort and portability when compared to a traditional oral device or CPAP

“Due to my new Oventus device I have found that I am sleeping far better. Previously I had a sleep apnea machine with a long hose and a nose piece. I was constantly battling with the hose because I felt like it was always pulling on my head. I was waking most mornings with a dry mouth and bloated stomach from the machine forcing air. I travel often and found it challenging to bring my machine with me. These things are no longer an issue thanks to my new Oventus device.”

Blake Schampers

“I use the Oventus device consistently now – and it has been wonderful, especially when visiting friends and family – no packing an extension cord to make sure the CPAP machine can be easily connected to power – and less luggage to carry.

The most significant advantage has been when travelling overseas – with my device in a tiny container in my handbag, I can sleep very comfortably on the plane knowing that I’m not irritating my fellow travellers by snoring, and arrive feeling refreshed and ready for action immediately on arrival.”

Jill Agnew



Be a part of unmasking the sleep industry's true potential!



Dr Chris Hart

Founder & CEO

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SLEEP BETTER.

LIVE BETTER.



Addendum

Appliance validation - O₂Vent[®] (Oventus Airway Technology)

Clinical trials to validate Oventus 'airway technology' and assist marketing

Name	Study/ Investigation	Patients completed (per Nov 2018)	Results - reduction in AHI (sleep events per hour)*	Commentary	Events
Sydney study (NeuRa) OVEN-005 CRC-P funded (\$2.95m) 3 stages over 3 years 180 Patients in Total	Pilot study	4	37 reduced to 8 = 78% reduction Airway Technology increased efficacy by 50% cf Traditional oral appliance	In addition to AHI reduction, 66% reduction in CPAP pressure required when using Oventus CPAP connector	Presented at AADSM/AASM Sleep 2017 in Boston
	Nasal Resistance Study	7	34.4 reduced to 7.0 = 80% reduction	Increased nasal resistance did not impact treatment outcomes	Interim results presented at Prague, World Sleep Congress (abstract) 9-12 October 2017
		39	29 reduced down to 14.5 = 50% reduction		Expanded results presented at European Respiratory Society in Paris September 2018
	PEEP Valve Study	22	21.6 reduced to 7.2 67% reduction In previous treatment failures	Success rates increased by 59% enabling over 75% of patients to be treated successfully without CPAP	Final results being presented at the ASA Sleep DownUnder Oct 2018
	MAS Combo Study	16	CPAP Pressure requirements reduced by 35-40%	Patients able to breathe through the device while using nCPAP eliminating the need for full face masks	Interim results presented at European Respiratory Society in Paris September 2018 Expanded results presented at ASA Sleep DownUnder Oct 2018

* Apnoea-Hypopnoea Index (AHI), known as 'sleep events' per hour occurring when the breathing airway collapses temporarily, leading to disruptions in breathing and sleep, in patients with Obstructive Sleep Apnoea (OSA)

Appliance validation - O₂Vent[®] (Oventus Airway Technology)

Clinical trials to validate Oventus 'airway technology' and assist marketing

Name	Study/ Investigation	Patients completed (per Nov 2018)	Results - reduction in AHI (sleep events per hour)*	Commentary	Peer Review
Perth study OVEN-004	Airway Open/Airway Closed	10	69.6 reduced to 19.4 = 72% reduction	Airway Technology increased Efficacy by 30 %	Interim results: Auckland Sleep DownUnder, ASA Conference (abstract) 25 October 2017
Effect of Oventus Airway on Upper airway Physiology	Predictors of response to Oventus Airway	22**	53.6 reduced to 29.4 = 45% reduction	Physiologic Study showing females exhibited greater response to Oventus Airway Technology	Final results presented at the ASA Sleep DownUnder Oct 2018
Brisbane study OVEN-003	Effect of Oventus Airway on Efficacy & Compliance	32	24 reduced to 10 = 58% reduction	Airway Technology increased response rate by 40% and success rate by 20% Increased efficacy in nasal obstructers and previous treatment failures	Final results presented at the ASA Sleep DownUnder Oct 2018
Brisbane study OVEN-001	Efficacy of Oventus O ₂ Vent	29	42 reduced to 16 = 62.5% reduction	Same response rate and efficacy with and without self reported nasal congestion	Journal of Dental Sleep Medicine, Vol 4, No. 3
Total patients		171			

* Apnoea-Hypopnoea Index (AHI), known as 'sleep events' per hour occurring when the breathing airway collapses temporarily, leading to disruptions in breathing and sleep, in patients with Obstructive Sleep Apnoea (OSA)

** 10 patients data on this study were presented previously in Auckland Sleep DownUnder ASA Conference