



The OWL Project

Obstructive sleep apnoea & **Weight Loss**

Evaluating the implementation of an embedded service for obesity in a sleep disorders clinic at a tertiary hospital setting using the RE-AIM framework



Dr Elizabeth Machan (Cayanan)
PhD. BAppSc (Hons I)
Lecturer, ESSAM AEP;
ESSA Accredited Exercise Physiologist & Nutritionist
Deputy Chair ANZOS EMCR Network
University of Sydney, Australia
elizabeth.cayanan@sydney.edu.au



Obstructive Sleep Apnoea and Obesity



Obesity is the most important major modifiable risk factor associated with OSA

Punjabi NM, Newman AB, Young TB, et al. *Am J Respir Crit Care Med* 2008;



Weight gain of 10% is associated with a 32% increase in disease severity (AHI)

Weight loss of 10% resulted in a disease severity reduction of 26%.

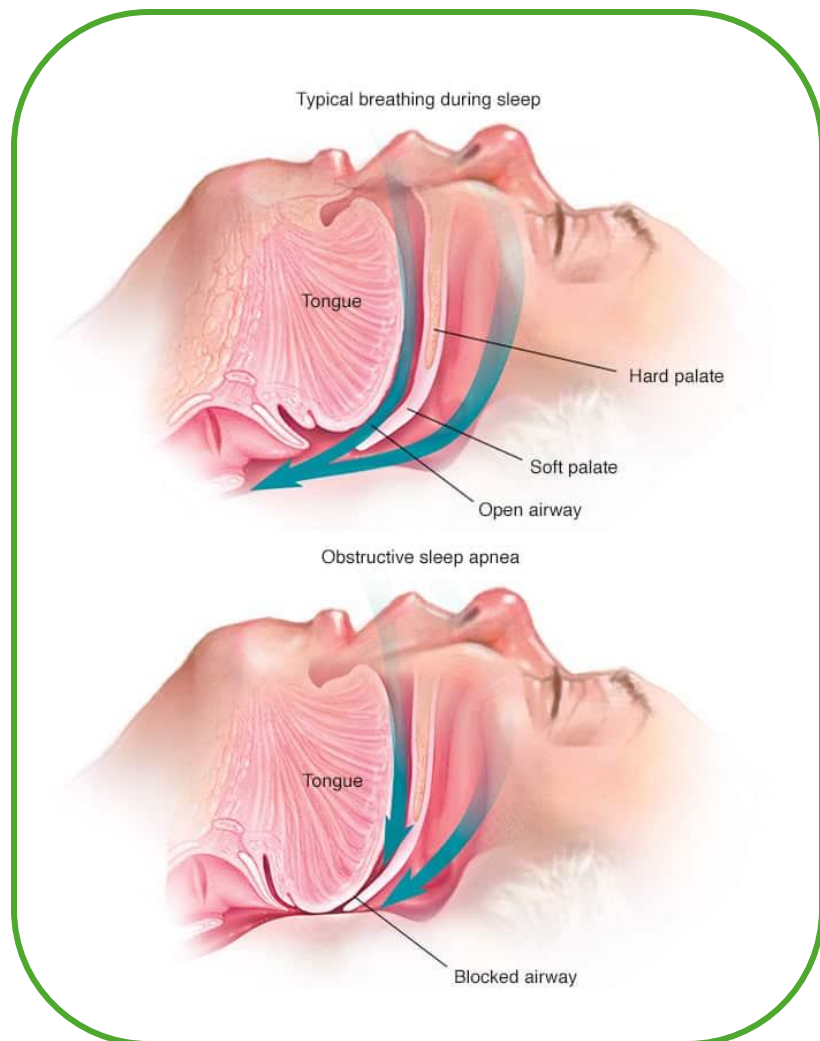
Peppard PE, Young T, Palta M, et al. *JAMA* 2000; 284: 3015–3021.



OSA is an independent risk factor for the development of cardiovascular disease, hypertension and type 2 diabetes.

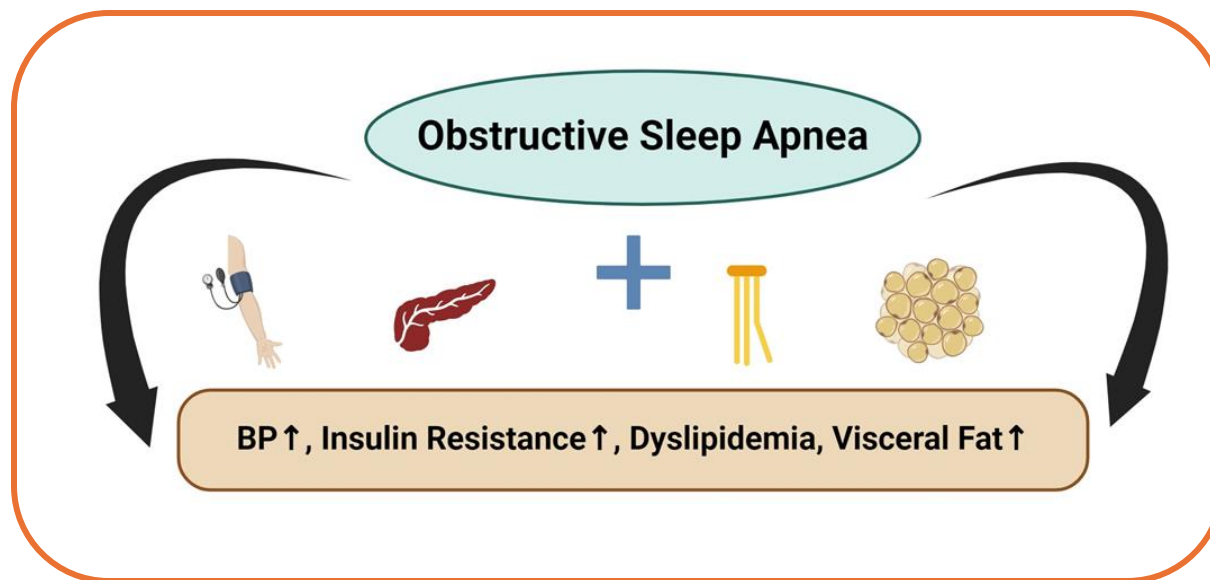
Hamilton, G. S., & Naughton, M. T. (2013). *Medical Journal of Australia*, 199, S27-S30.

What is Obstructive Sleep Apnoea



Driven by resulting:

- Inflammation
- Oxidative Stress
- Increases in Sympathetic Activity
- Left Ventricular Remodelling





THE UNIVERSITY OF
SYDNEY

Why target obesity in people with OSA?

2018: the American Academy of Sleep Medicine released treatment guidelines stipulating obesity be routinely addressed in clinical settings

Hudgel, D. W., et al. (2018). An official American Thoracic Society clinical practice guideline. American journal of respiratory and critical care medicine, 198(6), e70-e87.





The SLEEEP Study

Sleep, Lifestyle, Energy, Eating, Exercise Program



Regular Research Paper |  Full Access |

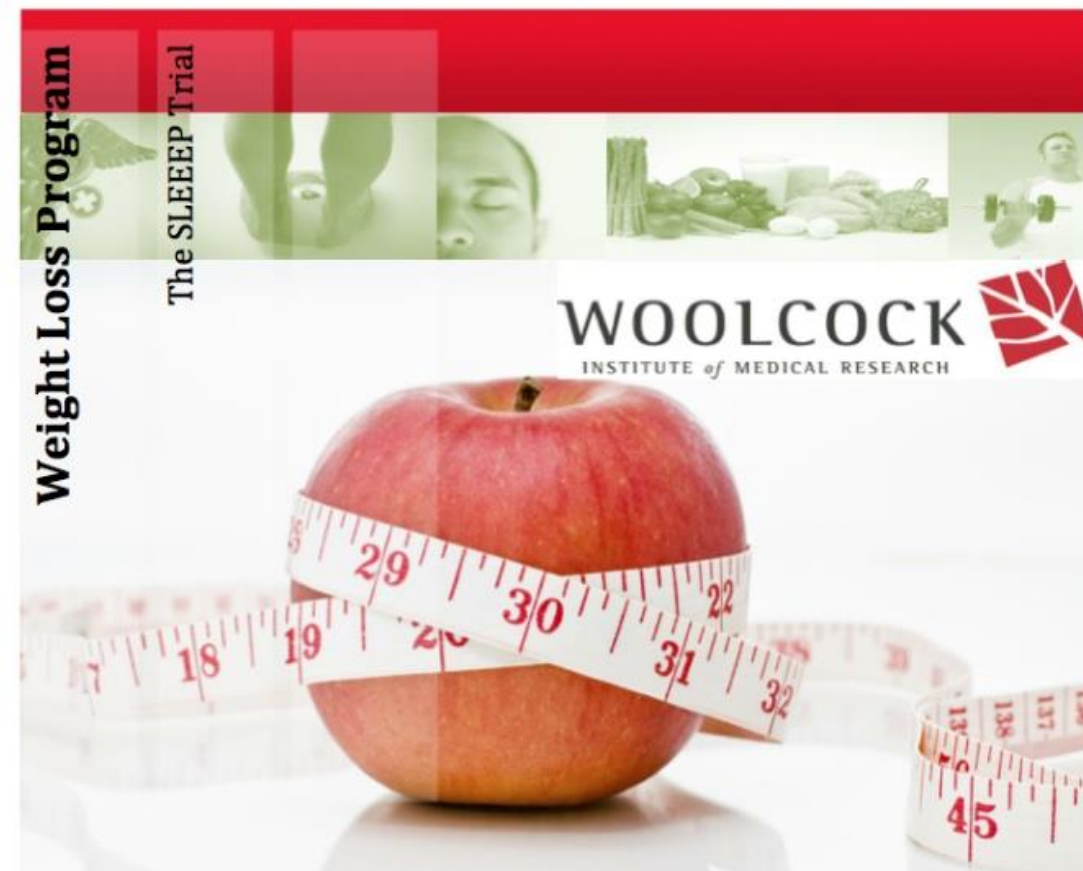
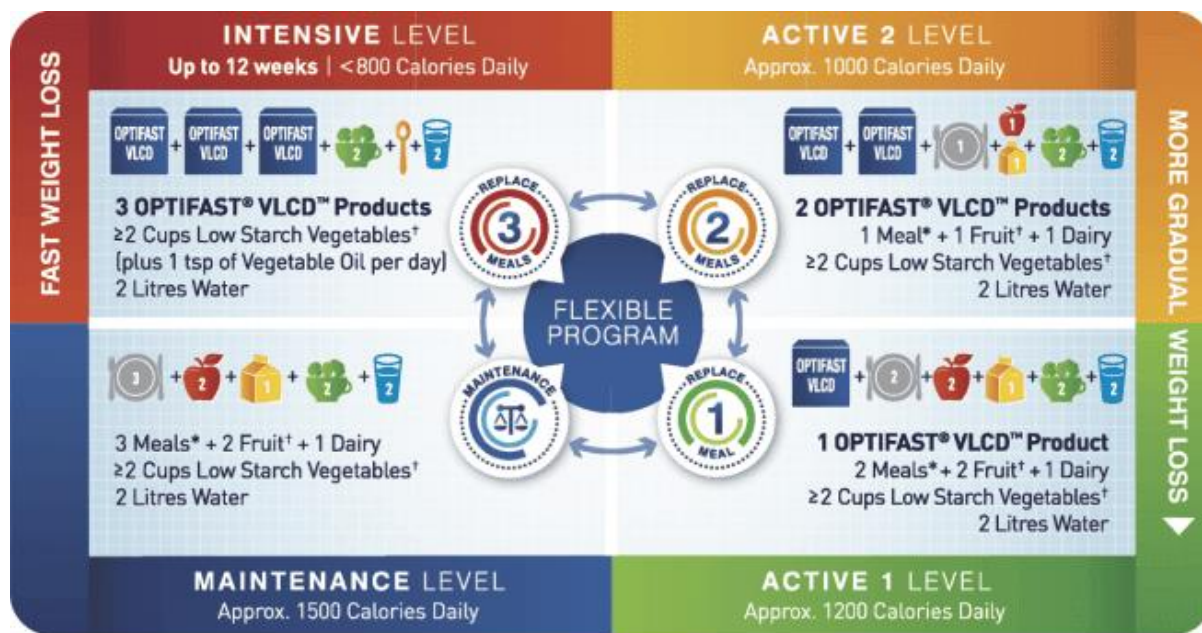
Maintenance diets following rapid weight loss in obstructive sleep apnea: a pilot 1-year clinical trial

Elizabeth A. Cayanan , Nathaniel S. Marshall, Camilla M. Hoyos, Craig L. Phillips, Yasmina Serinel, Keith K. H. Wong, Brendon J. Yee, Ronald R. Grunstein

First published: 30 June 2017 | <https://doi.org/10.1111/jsr.12572> | Cited by: 3



The Weight Loss Program



Headspace & Exercise

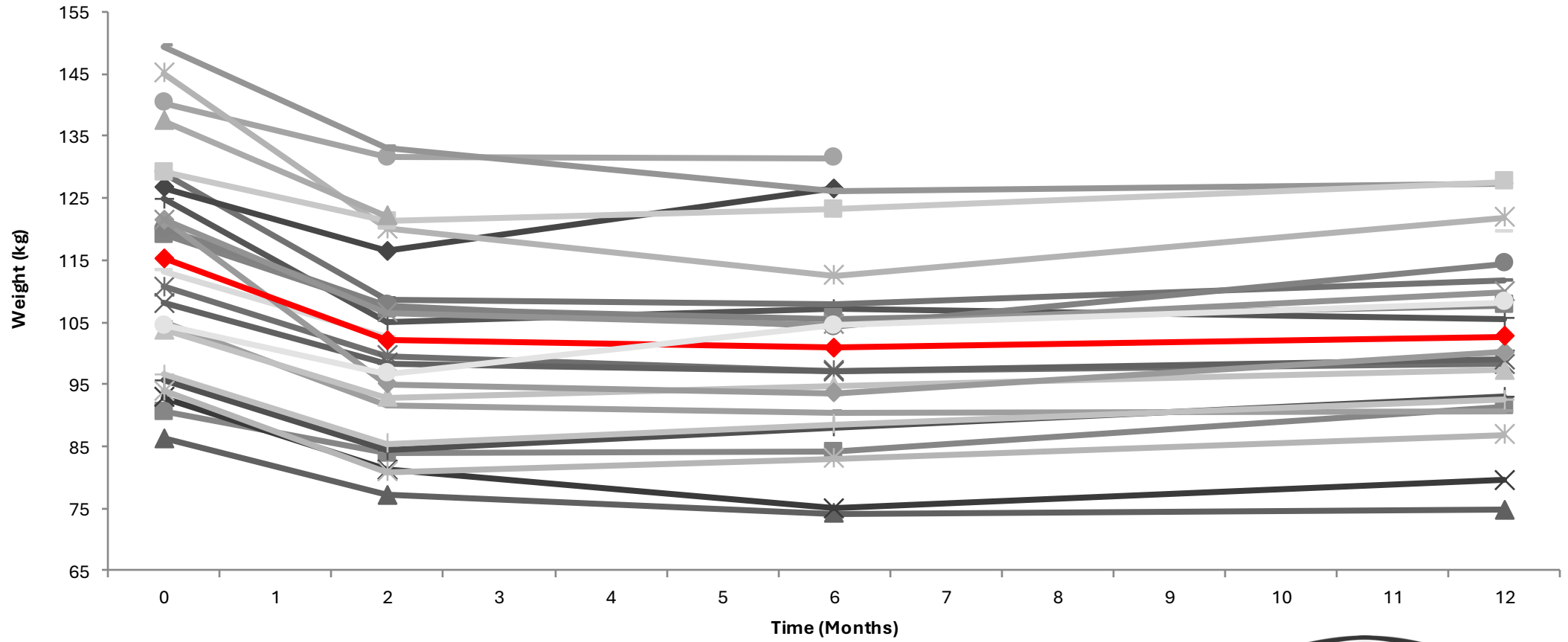
Food Choices

Food Thoughts & Lapses

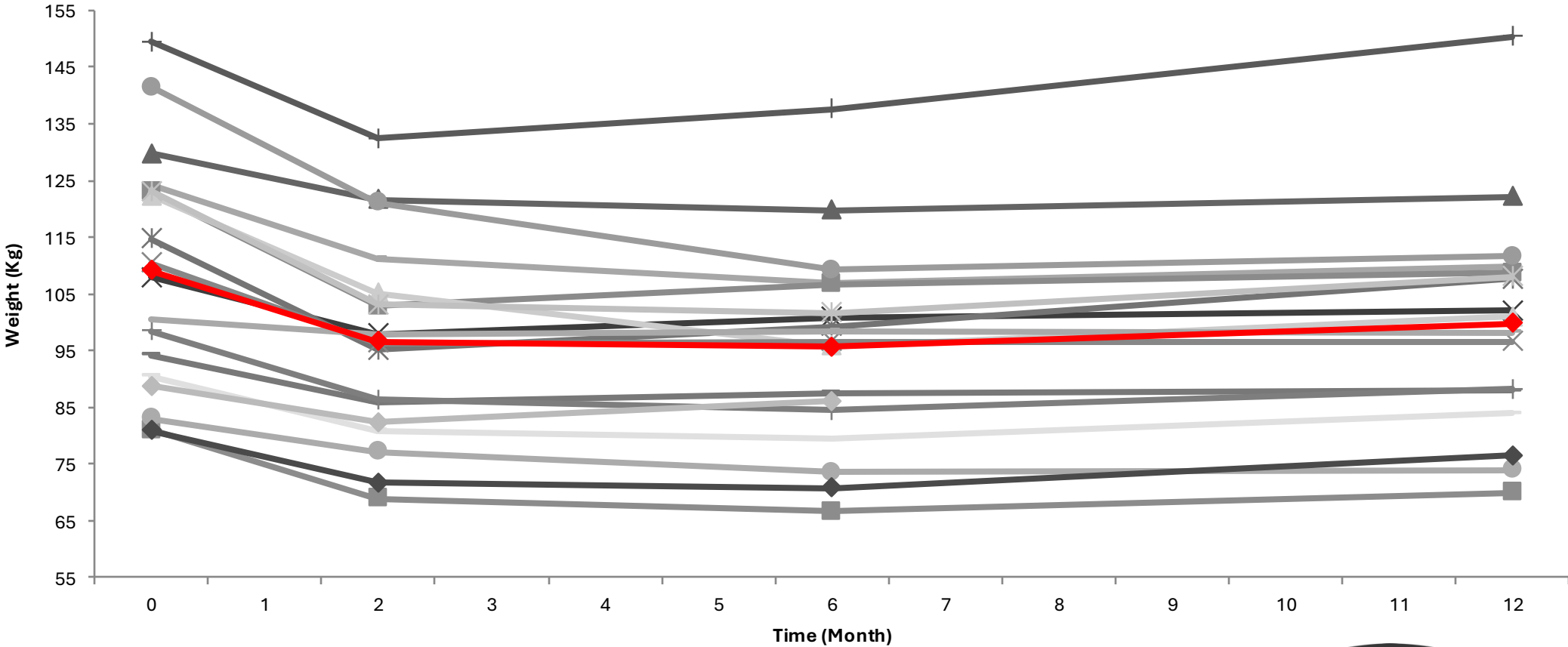
Maintaining Change

Self Managed

People on CPAP Lost Weight (and kept it off)



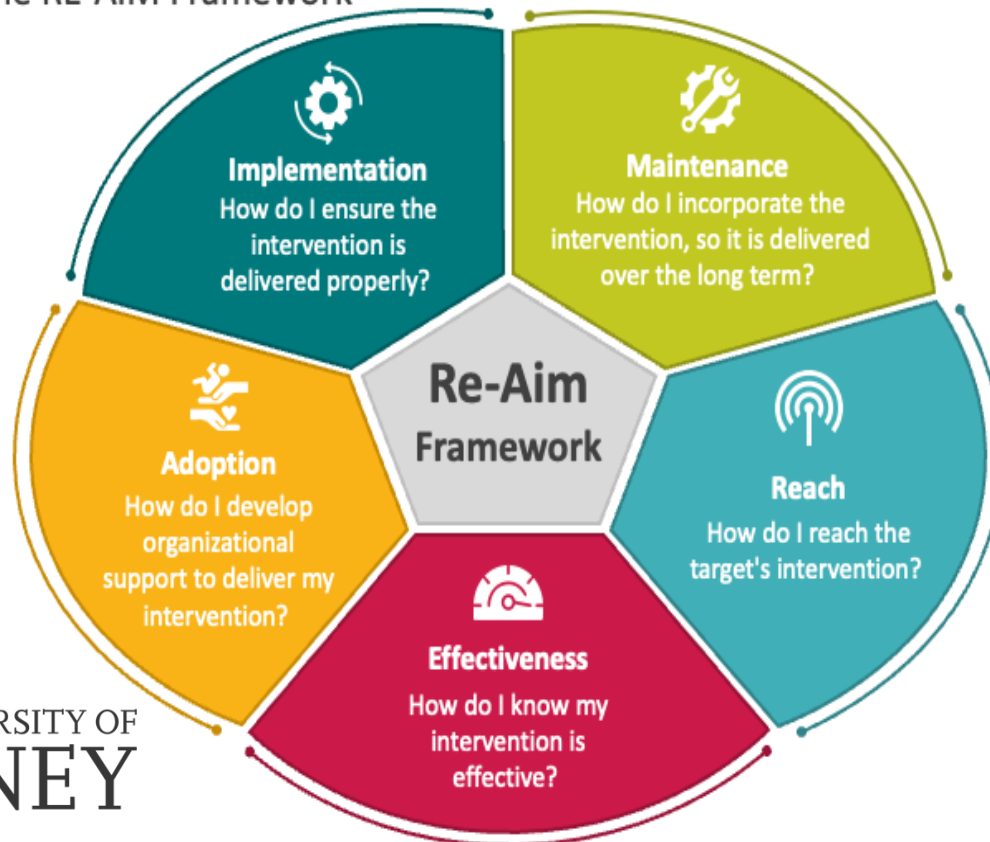
And so did those who were not on CPAP ...



Now let's do it in the real world

RE-AIM FRAMEWORK

Elements of the RE-AIM Framework



THE UNIVERSITY OF
SYDNEY

ROYAL PRINCE ALFRED HOSPITAL'S

SLEEP UNIT WEIGHT LOSS SERVICE

Very low energy diet information booklet

THIS STUDY HAS BEEN APPROVED BY THE SYDNEY LOCAL HEALTH DISTRICT ETHICS COMMITTEE (X18-0506) VLED INFORMATION MASTER VERSION 1. 09/07/2019 ROYAL PRINCE ALFRED HOSPITAL VERSION 1. 09/07/2019

So... We Broadened the Inclusion Criteria



1. OSA (AHI > 15 events / hour) based on recent (<12 months) polysomnography (PSG)



2. Significant adiposity: BMI > 27 kg/m² and/or waist circumferences > 88cm for women and > 102cm for men (non-European: females > 80cm, males > 90cm)



3. Community dwelling adults aged 18-65 years



4. Willing and medically able to participate in a supervised very low energy diet and the dietary and lifestyle modification programme for the duration of the study



THE UNIVERSITY OF
SYDNEY

R: Reach



- *Study Inclusion Criteria*
- Age 18-65 years
- BMI > 27 kg/m²
- AHI ≥ 15 events/hour



- *MOS Inclusion Criteria*
- BMI > 35 kg/m²

Retrospective eMR Analysis
(2017 - 2019:
n = 2009, Mean = 670)
29.8% Eligible/ Potential Reach
34.4% Eligible for MOS

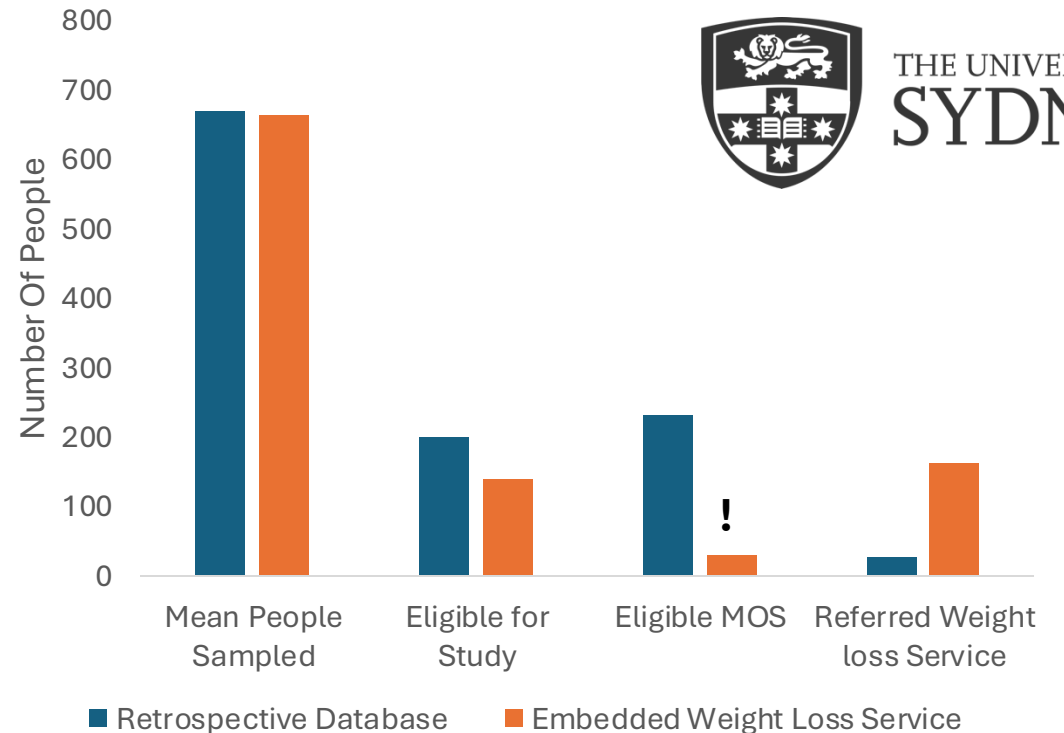
3.9% Referred to MOS

Reach= confirmed generalisability of service uptake

Embedded Weight Loss Service
n = 665 patients (cumulative 10 months + COVID19)
20.9% Eligible / Potential Reach
61.7% Eligible for MOS

24.5% Referred Embedded Service

Reach = The absolute number and proportion of eligible patients who agreed to participate the study

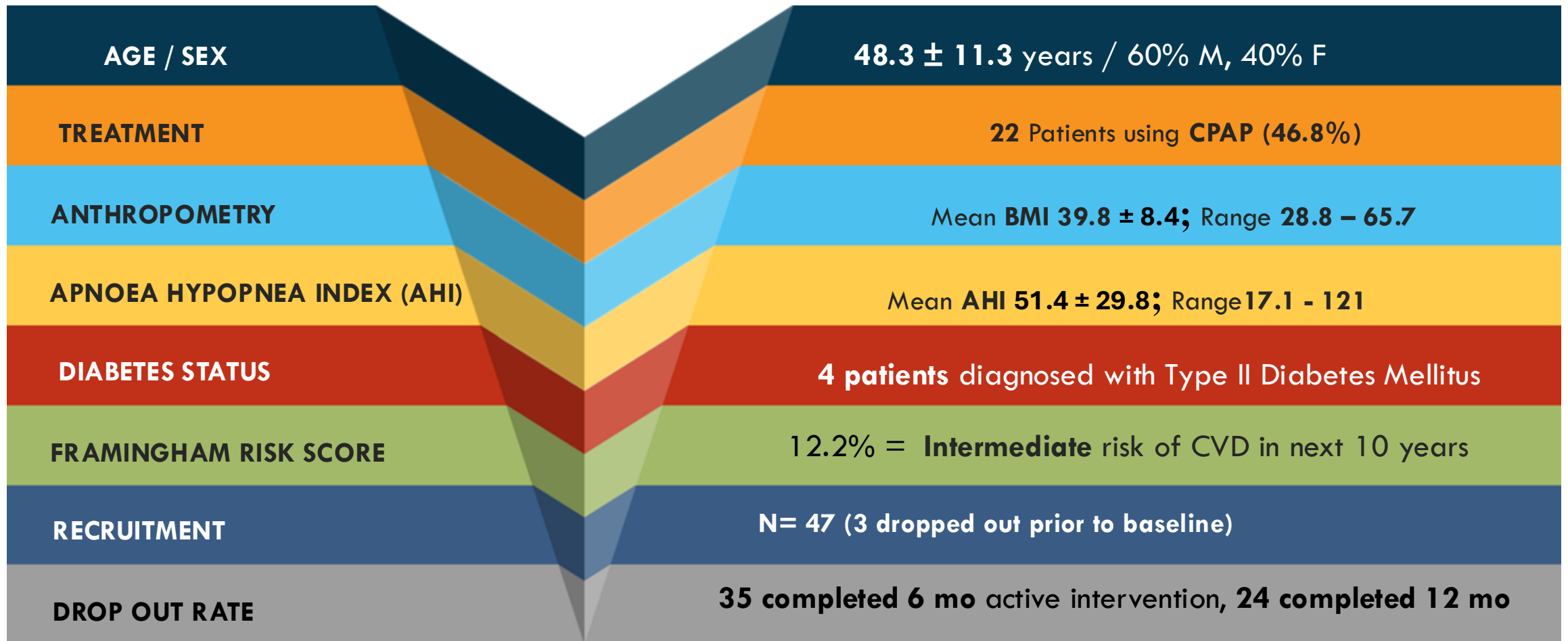


MOS: metabolism & obesity services at Hospital

50 Patients enrolled (36% Uptake)



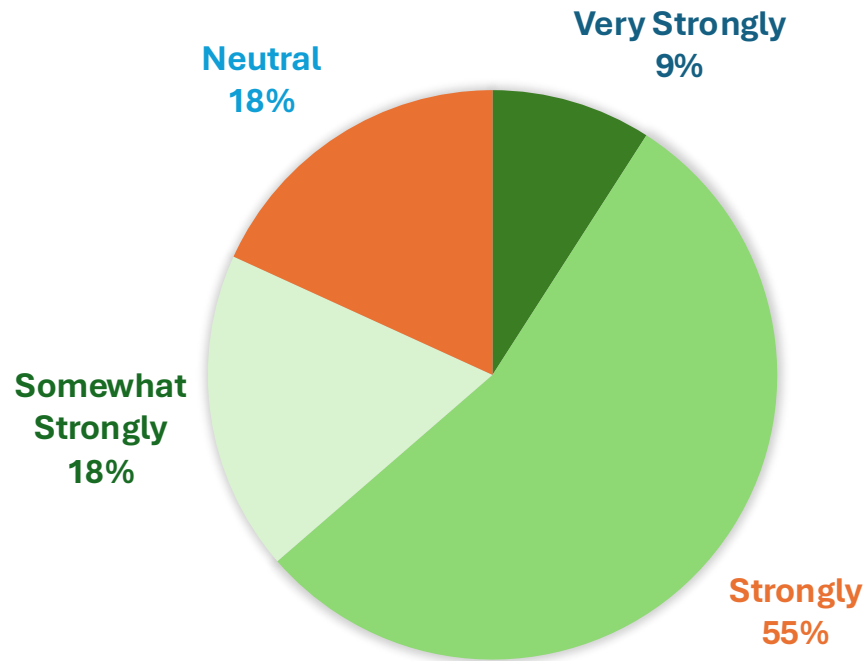
E: Effectiveness (Baseline Descriptors)



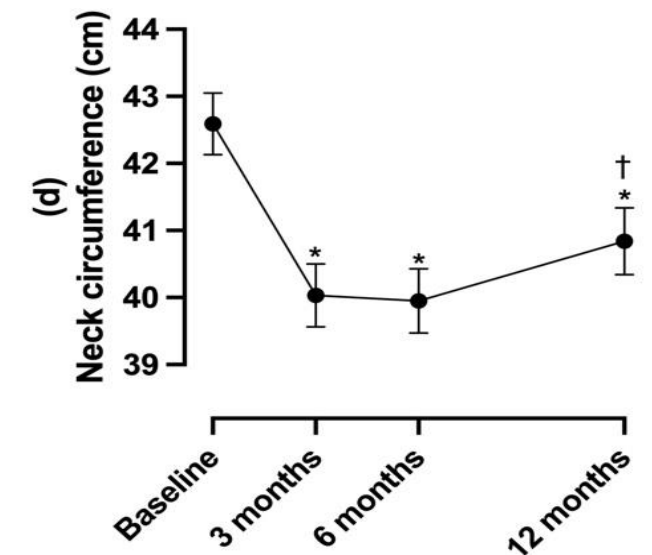
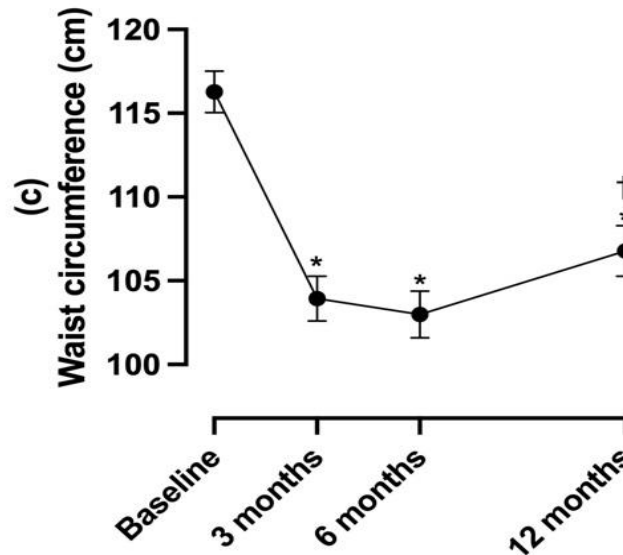
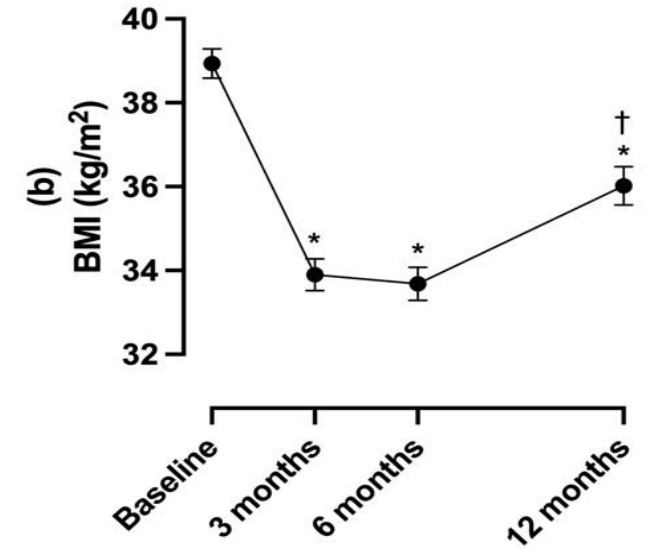
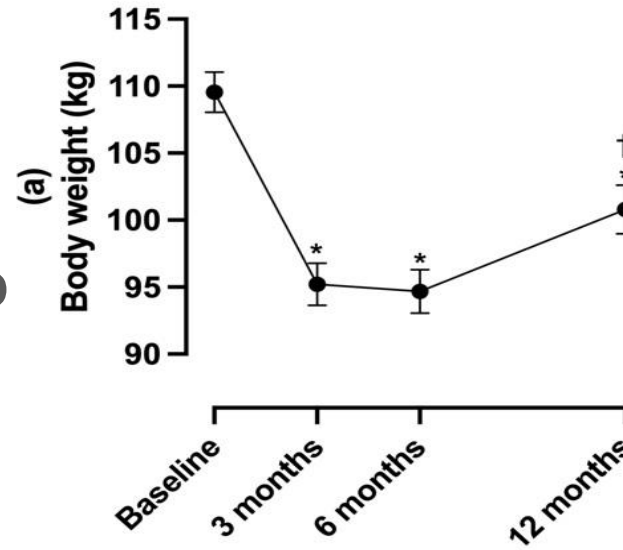
E: Effectiveness

- Clinician Survey (N = 15)

DO YOU BELIEVE THE TRIAL IMPACTED POSITIVELY ON PATIENT OUTCOMES?



Anthropometry



A: Adoption



**11/15 Clinicians
Filled in Survey**



**Sleep Physicians, Sleep
Registrars/Advanced
Trainees, Dietitian,
Nurses/CPAP Therapists**



**10/11 were satisfied
or very satisfied
with the
recruitment**



**7/11 Clinicians felt
supported and equipped to
initiate and follow up
patient progress. Future
support resources
requested**



**7/11 Felt the
recruitment
process, staff
support and
location worked
well**



THE UNIVERSITY OF
SYDNEY

A: Adoption – What worked well for clinicians

“Having a **dietitian and support staff** based in the respiratory failure/sleep services”



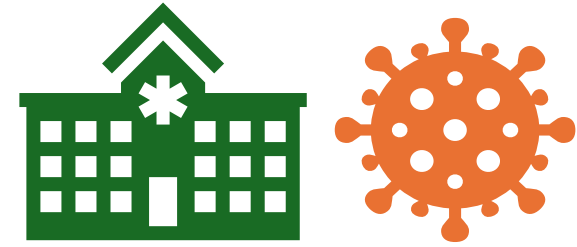
“Being able to enroll at the time of the clinic visit was a strong part of this program”



“Frequent **reminders**. Covid-19 and switch to phone consults I think adversely impacted recruitment - *not seeing patients made me less conscious about their weight issues.*”



I: Implementation



3 months intensive weight loss VLED

Intensive 3 month VLED program prescribed by study dietitian first 9 months

Intensive 3 month VLED program prescribed by routine clinical care staff latter 3 months and supervised by study dietitian



3 months clinician led weight loss maintenance

Tailored 3 month maintenance program provided by study dietitian until 9 month time point (last enrollment)

3 month maintenance period referred to Get Healthy Coaching Service in last 3 months.



Coaching Service Phase

Intensive 3 month VLED program prescribed by routine clinical care staff in last 3 months under supervision by study dietitian.

3 month maintenance period referred to Get Healthy Coaching Service



THE UNIVERSITY OF
SYDNEY



I: Implementation

Barriers

COVID 19 Hospital Shut Down

- Impacted recruitment and meant pivoting to online consultations

Barriers to recruitment (clinician survey):

- Patient Disinterest (6/15)
- Medical Co-morbidities/Instability (4/15)
- Time and difficulty explaining the study/ intervention were not barriers

Lack of Departmental Communication

- Poor communication between associated departments results in missed opportunities to support patients in weight loss.

Limited Clinic Time and Space

- Complex needs of patients results in Sleep Unit staff and research dietetic staff needing to spend extensive time in consultations.

Complex Health Status of Patients

- Complex and co-morbid health conditions (particularly mental health and cardiac) results in higher levels of ineligibility.

Facilitators

Physical Presence on the unit

- A reminder to engage with the research and service

Strong collaboration with experienced staff

- Ability to work with clinicians who were able to support participants

Regular Communication within the team

- Frequent meetings and updates to disseminate information

Facilitators for recruitment (clinician survey)

- Sufficient Staff support (5/15)
- Strong communication with clinicians, research staff, allied health (7/15)
- Well developed recruitment process (4/15)

M: Maintenance (Clinician Perspective)



Future: How could the recruitment process be streamlined

More research staff/clinician/allied health support: (9/15)

More advertising of the service (5/15)



In what ways could participation be improved:

Increased support for patients who enroll into the service (7/15)

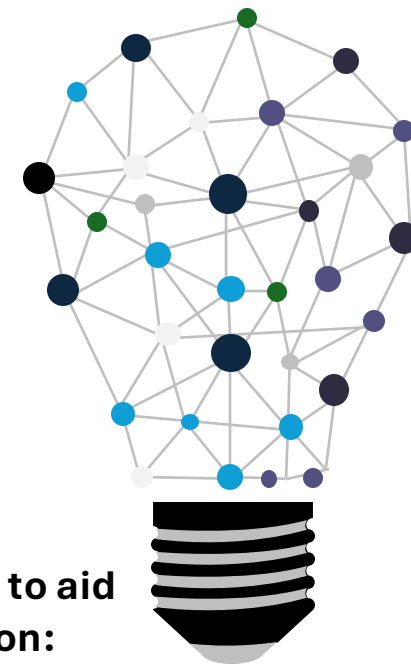
Decreased cost of the service e.g. provision of VLED (5/15)

Increased promotion of the service (6/15)



Future resources to aid implementation:

8/15= Brochures/ Information and staff support



THE UNIVERSITY OF
SYDNEY

“Sometimes the clinicians become distracted by all the other things happening. Having the research staff located in the service was one of the strengths of this trial as it was a constant reminder.”

“There is general awareness that weight loss is an important part of managing OSA, but if patients are not coming physically to the clinic they miss much of the publicity regarding research.”

Thank you & Questions

Principal Investigator: Dr Elizabeth Machan

Statistical Support: Dr Yorgi Mavros, Ms Hoi Ying Yen, Ms Tonia Chu

Other Chief Investigators:

- Prof Brendon Yee.
- A/Prof Craig Phillips
- Prof Ron Grunstein
- A/Prof Keith Wong
- A/Prof Nathaniel Marshall
- Prof Bandana Saini



Sleep Department & OWL team,
Royal Prince Alfred Hospital



Sleep and Chronobiology Research Group, Woolcock Institute of Medical Research